ENGINEERING NEWS-RECORD

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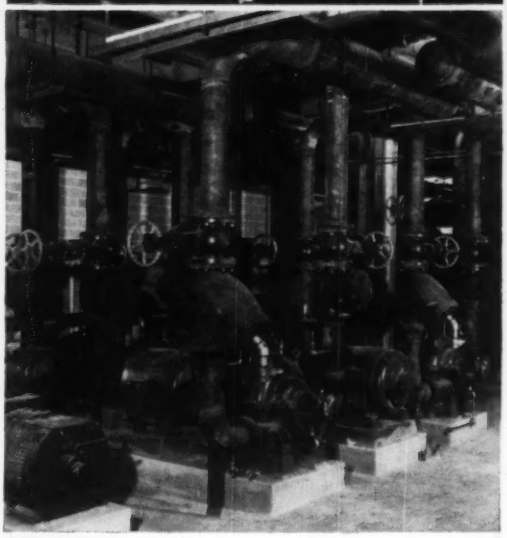
A matter of record...
WROUGHT IRON PIPE
dependability in
STEAM CONDENSATE LINES



There's little doubt about the highly corrosive action of steam condensate on piping material. The big question is, "Which piping material will last the longest?" Our Engineering Service Department knew the answer a long time ago—Wrought Iron Pipe—and have been confirming the fact ever since with detailed service records, kept up-to-date with accurate, regular field reports. Our files are bulging with these case histories—important to you because they provide actual proof of wrought iron pipe's durability and economy in steam condensate line applications.

Some of these case histories are covered in our Special Report—*The Use of Wrought Iron Pipe for Steam Condensate Lines*. You'll find, too, informative material on factors causing corrosion, including the effects of oxygen and carbon dioxide. There is also a section on how to minimize corrosion. We would like you to have a copy. Write for it now.

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The Benson Mines, at Star Lake, deep in New York's Adirondacks, have been worked since pre-Revolutionary days—but working the low-grade, non-magnetic ore by old-time methods wouldn't pay today. Now a 30-unit fleet of 22-cubic-yard trucks, rolling on Goodyear tires, moves mountains to lay the ore body bare. 4-ton drop-balls, with old tires as shock absorbers (as shown above), break blasted rock to crusher size—and ingenious spiral troughs find "pay dirt" by the ton!

Besides stripping overburden of earth, trees and brush, earth-moving hands have endless road-building work—an earmark of open-pit mining.

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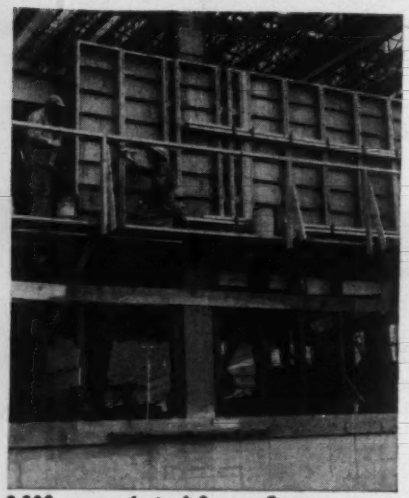

9,000 square feet of Symons Forms were reused 12 times on this job. William Baumeister Construction Co., St. Paul, general contractor.

Spandrel Beam Forming Costs Cut ⅓ with Symons Forms

Because of the efficient combination of Symons forming, shoring and scaffolding methods, the contractor was able to cut his estimated cost by two-thirds on the $2,000,000 home office building of the Minnesota Mutual Life Insurance Company of St. Paul, Minnesota.

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View of a spandrel beam after Symons Forms have been removed.

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Publisher

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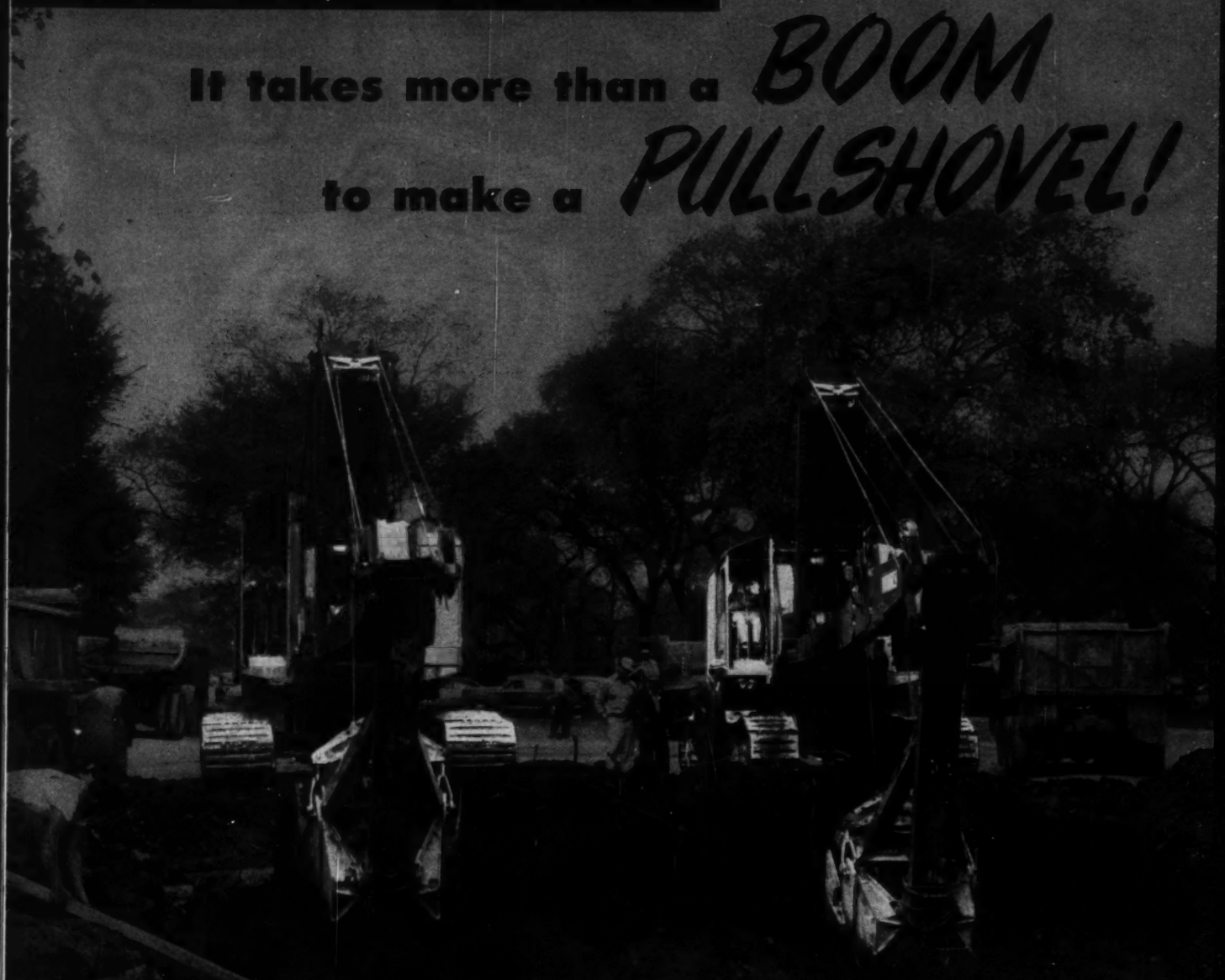

Two of Healy Brothers 15 Northwests working on the 120" Wrightwood Avenue Sewer in Chicago.

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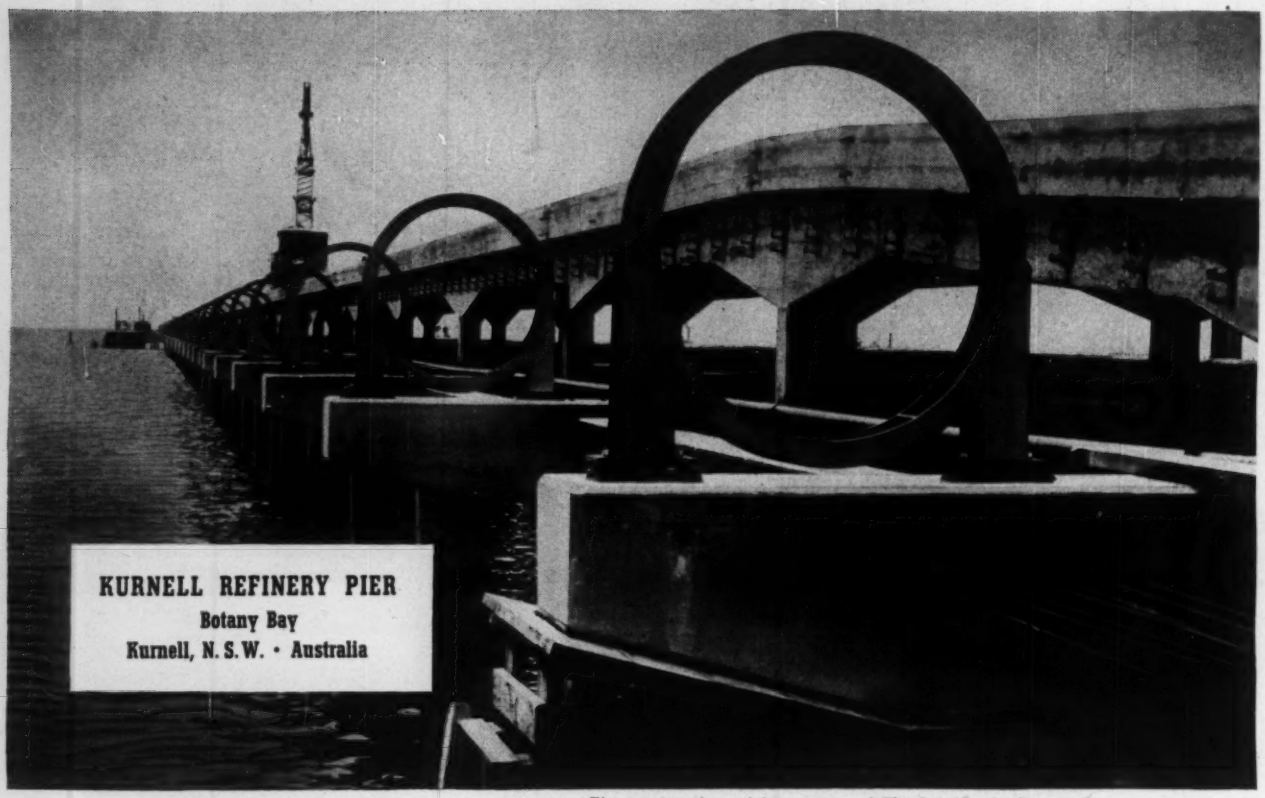

The construction a joint venture of Fletcher-Merritt-Raymond under contract to E. B. Badger & Sons Pty. Ltd.

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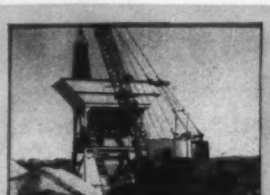
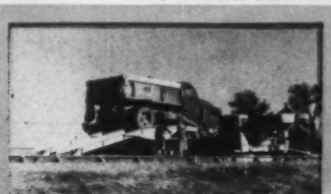
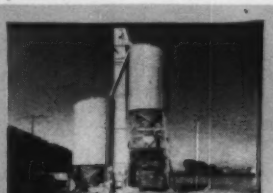


Blaw-Knox Aggregate Batching Plant used on "short-cut to Winnipeg".

Schultz & Lindsay's Multi-Foote 34E DuoMix Paver.



A loaded batch truck on the ramp over Schultz & Lindsay's Blaw-Knox Precision Subgrader, on the way to the paver.



Blaw-Knox Cement Batching Plant on the North Dakota State Highway job.

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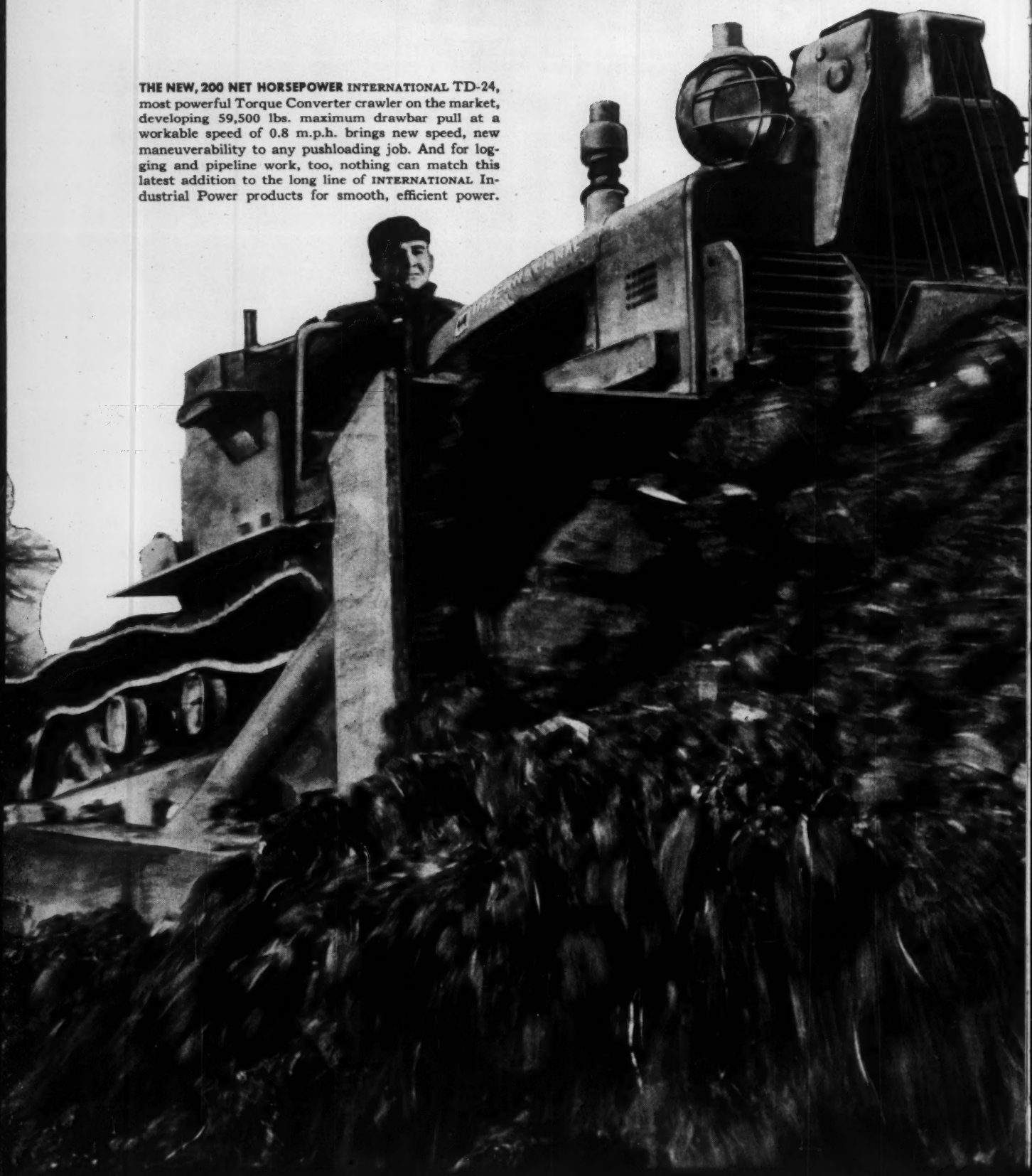
THE NEW, 200 NET HORSEPOWER INTERNATIONAL TD-24, most powerful Torque Converter crawler on the market, developing 59,500 lbs. maximum drawbar pull at a workable speed of 0.8 m.p.h. brings new speed, new maneuverability to any pushloading job. And for logging and pipeline work, too, nothing can match this latest addition to the long line of INTERNATIONAL Industrial Power products for smooth, efficient power.



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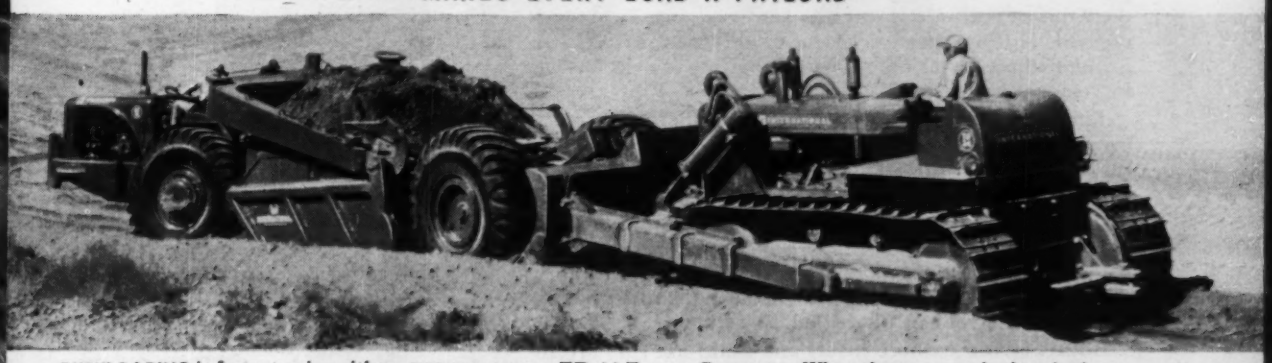
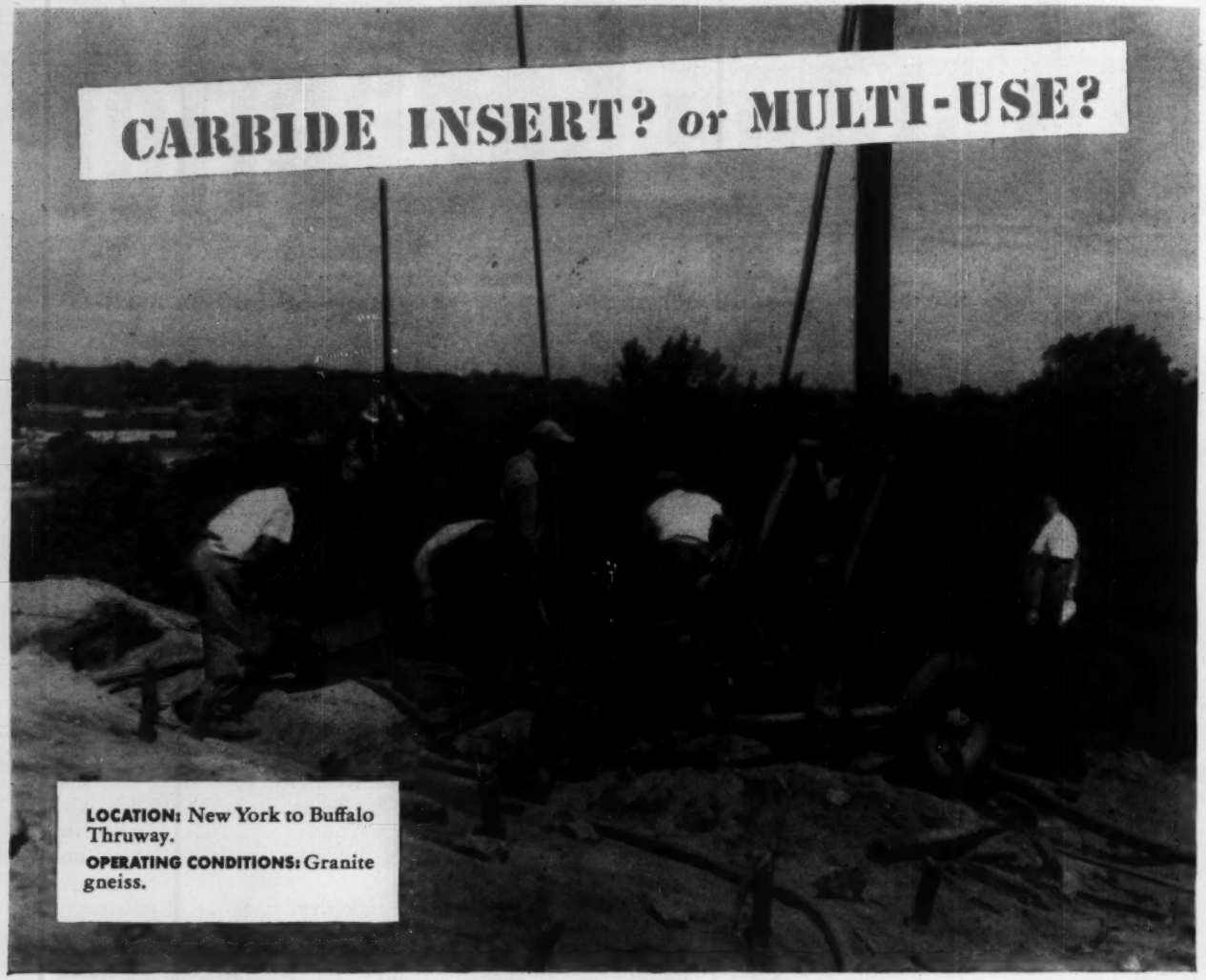


PUSHLOADING is faster, easier with an INTERNATIONAL TD-24 Torque Converter. When the new crawler is paired with INTERNATIONAL high-speed earthmovers, contractors have a combination that can't be touched for long-haul performance. You get the heavy push you want at the speed you need for steady contact without gear shifting. This great power plus control means far greater safety, far less wear and tear on men and equipment.



Yonkers Contracting Company, Inc., cuts granite drilling costs on New York thruway with TIMKEN® carbide insert bits

IN drilling extremely hard and abrasive granite gneiss on the New York Thruway, Yonkers Contracting Company, Inc., found the most economical bit for the job was the Timken® carbide insert bit. That's because it gave increased drilling speed with fewer bit changes through ground where it was otherwise impossible to drill out full increments of drill steel.

Timken carbide insert bits are also most economical for extremely deep holes, small blast holes, constant-gauge holes and block hole drilling in hard ground.

But they may *not* be the best solution to *all* your drilling problems.

For ordinary ground, Timken multi-use bits are most economical. With correct and controlled reconditioning, they'll give the lowest cost per foot of hole when full increments of steel can be drilled.

Both Timken carbide insert and multi-use bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. As the ground changes, you can change bits quickly and easily—right on the job!

To get the best bit type for *your* drilling requirements, consult the Timken Rock Bit Engineering Service. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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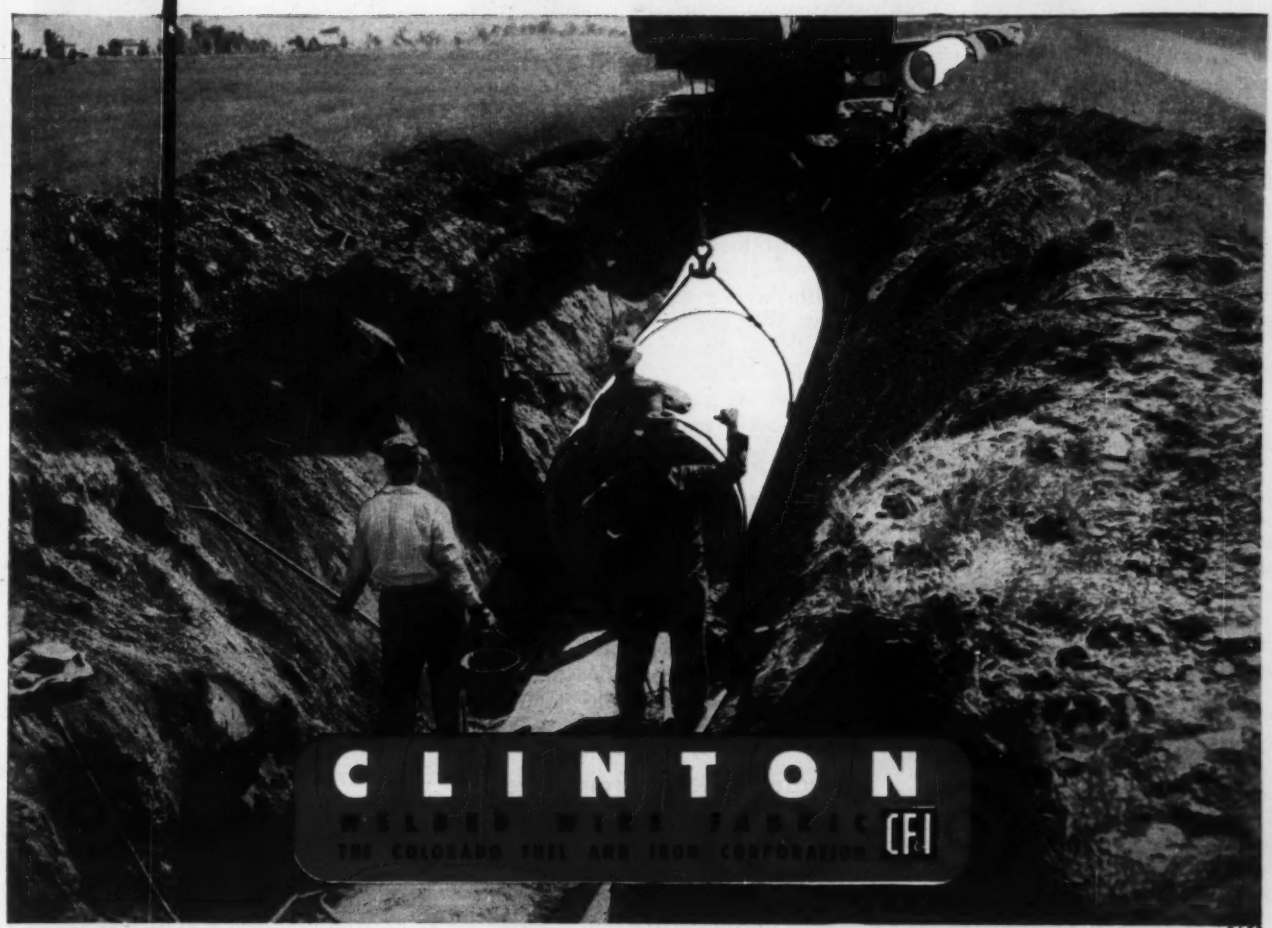

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READER COMMENT

Thin Walls Still Too Costly

SIR: ENR's Feb. 17th issue reports, on p. 87, a trend to thin, lightweight curtain walls in the interest of increasing floor area and reducing foundation costs. Getting a higher return on a lower investment is the very basis of free enterprise and a goal always to be sought. Let us admit, however, that what has been done to date by the metal industry can only be labeled experimental, rather than an accomplishment of that goal.

Thin, light walls can have a definite advantage, and it is for this reason that the Structural Clay Products Research Foundation is working on lightweight clay masonry wall materials. However, ENR points to the efforts of the metal-skin industry as though they had already succeeded in producing higher returns on lower investments. Based on our detailed investigation of several metal-skin buildings, this is not the fact. They have indeed built lighter and thinner walls, but at such a high cost as to defeat their purpose. Practically all such walls built to date have, in a word, been completely uneconomical.

Consider a 22-story building with 12-ft story heights and a plan of 200x200 ft. Reducing the exterior wall thickness by 4 in. will produce a total increased floor area of 5,280 sq ft. Renting this additional space at $5 per sq ft per year will bring in an additional rent of $26,400 per year, or $2,200 a month.

The same building has an exterior wall area of 192,000 sq ft. Based on the wall cost data presented in ENR Oct. 7, 1954, p. 213, a comparable metal-skin wall would cost $2 to $5 per sq ft more than a clay masonry wall. Take an average increased cost of $3 per sq ft. That represents an increased cost of $576,000 for the metal-skin wall. At 5% interest on a 20 year loan, it takes $3,801.60 per month to amortize the increased initial cost.

Thus, the unhappy investor loses $1,600 per month for the next 20 years on his metal-skin building. Similar calculations for aluminum-skin buildings already constructed indicate that it will take 300 years in order to pay off the additional cost for some of them.

Now, what about that reduced foundation cost? The 10-story, $10 million Texas National Bank Building in Houston, now nearing completion, provides an excellent case to study, because of the large wall areas of both aluminum skin and clay masonry. The corners of this building are constructed of clay masonry walls, which extend back several bays from the corner for the full building height. The remainder of the elevations between corners are of aluminum-skin construction, which according to the contractor costs about $10 per sq ft to build, or about three times the clay masonry cost. The foundations under the masonry walls are identical in size and cost to those under the broad expanse of aluminum skin. Generally, the dead weight of the exterior walls accounts for a relatively small percentage of the total load on the foundation, and cost savings, depending on the framing, are either negligible or non-existent.

ENR's February 17th issue states also that maintenance costs for metal skin are expected to be less than for conventional masonry walls. On what basis does one expect to come to this expectation? Broad general statements without supporting data mean very little indeed. We would like to see the proof. Brick is notoriously maintenance free.

ENR also claims speedy erection for metal skins. Everyone saw the New York building faced with aluminum in one day (ENR July 1, p. 23), but what they did not see was the crew of 20 men who worked five months getting ready for the one-day show. One week before the stunt, virtually all construction trades were laid off their jobs, while special crews set all of the panels in just the right place. Such practices may demonstrate a keen sense of showmanship, but they hardly contribute toward speedy construction or lower costs.

In summary, lightweight, thin walls can have a definite place in the construction industry, but those presently in use are not economically feasible at this time.

CLAYFORD T. GRIMM
Executive Secretary
Clay Products Assn. of the Southwest
Austin, Texas

Tribute to Corps From Korea

SIR: In 1954 the U. S. Army Corps of Engineers put an indelible stamp upon the future of the war-torn Korean peninsula through Armed Forces Assistance to Korea (AFAK).

Last year a twenty odd million dollar gift from the United States was expended in a tremendous rehabilitation program in the Republic of Korea. The Corps of Engineers was directly responsible for spending over 75% of the total.

By far the largest portion of AFAK has been undertaken in the section of Korea lying south of Seoul and extending to Pusan on the peninsula's southernmost tip. The area is the responsibility of the Korean Communications Zone (KComZ), commanded by Maj. Gen. E. J. McGaw.

Projects involving AFAK are sponsored by individual units or by higher commands, with the latter generally involved in civic improvement projects. In this category are municipal buildings, roads, fire departments, railway improvements and other such construction.

When a unit or group desires to sponsor a project, plans for the undertaking are submitted. The key criterion is that construction be of material benefit to the Republic of Korea as a whole, and not for the benefit or profit of any particular individual or group.

Last year more than 500 such projects were approved by KComZ and of this total 91% were either completed or underway as of November.

AFAK construction is thus highly varied; it conforms as nearly as possible with Korean architecture, but all buildings adhere to U. S. standards of simplicity, usability, permanency, and are as fireproof as possible.

KComZ engineers have estimated that building supplies represent about one-fourth of the total value of finished construction under AFAK. As far as possible, procurement of AFAK materials is through normal Army Engineer supply channels. The utilization of engineer equipment is authorized, on a loan basis to the sponsoring units.

All plans are drawn up in Korean and in English. Some standard Corps of Engineers' plans are used, but some have been redrawn to fit local materials, architecture and capabilities.

The following editorial, from a recent edition of the KOREAN REPUBLIC, published in Seoul by the Korean Information Service, Inc., is a tribute to the Corps of Engineers:

"Too little has been said in praise of the great contribution that the Corps of Engineers has made to our country.

"Many people are amused over the signs posted near bridges and other installations all over Korea, which read 'This bridge constructed by Umpty-umpth Engineer Regiment, United States Army.' Some call this a rather bumptious boastfulness. To us, it is nothing of the kind—but is rather evidence of the pride that every compe-

Shown is the Model 848 Intermediate Plant. There is a Barber-Greene Plant to meet the needs of every user, for every capacity, for every type of mix.

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MIX profitably.

MIX more tonnage per season. **MIX** to meet all specifications.

MIX continuously, with the principle that is inherently automatic.

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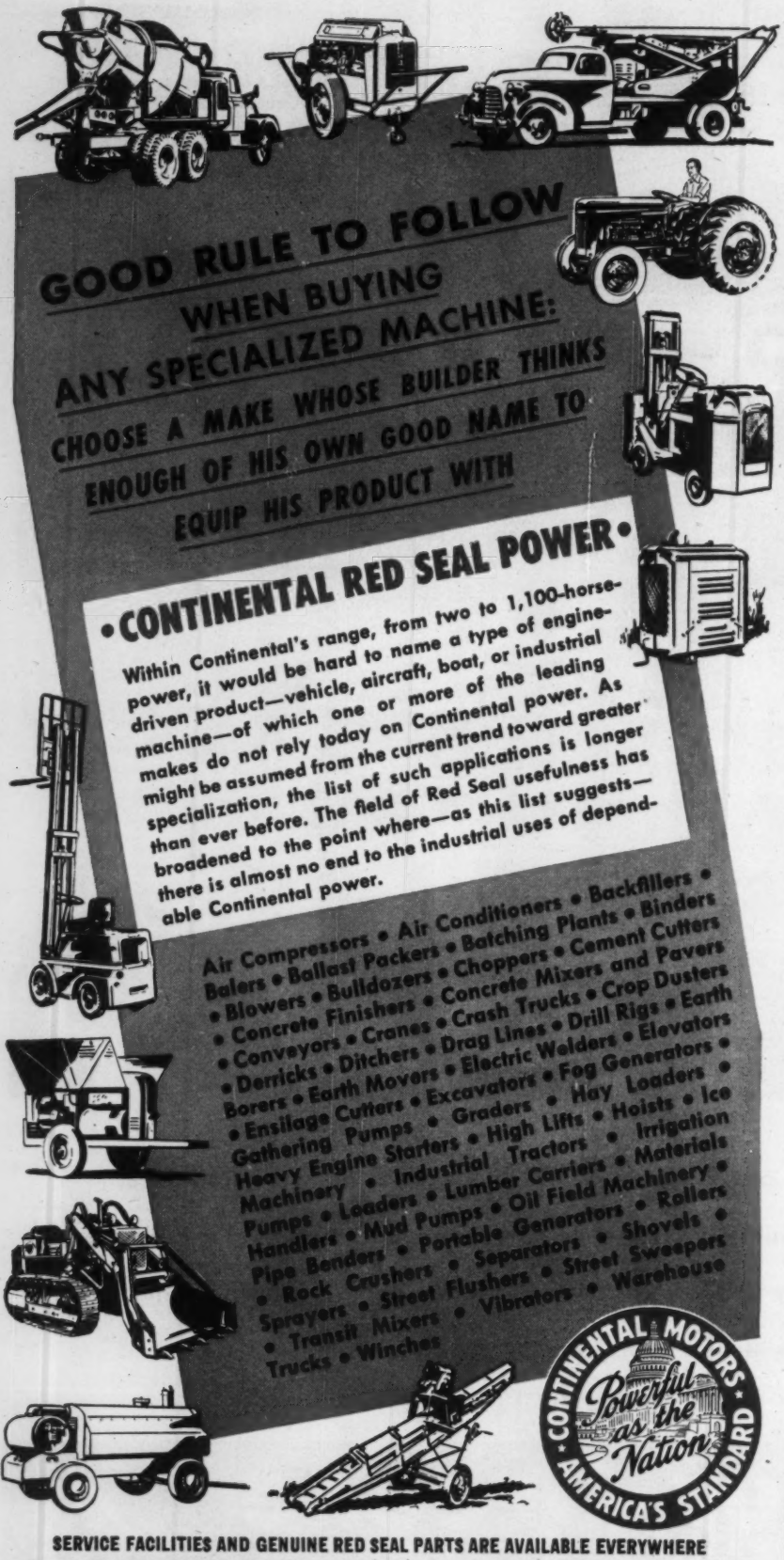
GOOD RULE TO FOLLOW
WHEN BUYING
ANY SPECIALIZED MACHINE:
CHOOSE A MAKE WHOSE BUILDER THINKS
ENOUGH OF HIS OWN GOOD NAME TO
EQUIP HIS PRODUCT WITH
•CONTINENTAL RED SEAL POWER•
Within Continental's range, from two to 1,100-horse-power, it would be hard to name a type of engine-driven product—vehicle, aircraft, boat, or industrial machine—of which one or more of the leading makes do not rely today on Continental power. As might be assumed from the current trend toward greater specialization, the list of such applications is longer than ever before. The field of Red Seal usefulness has broadened to the point where—as this list suggests—there is almost no end to the industrial uses of dependable Continental power.
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READER COMMENT

tent craftsman or artist feels when he looks at the finished product of his brains and hands—and know that it is good. We recommend to our Government that permanent plaques replace such signs after the Americans have gone, and that each permanent bridge constructed by the United States Army in Korea be permanently and officially named for the unit which built it.

"It is probable that many U .S. Engineer units will accompany departing U. S. Army divisions. We want them to know that they have won our respect, our admiration, and our gratitude, and they leave behind a legacy of technical proficiency that our own civil and military engineers will strive to emulate."

M/Sgt John M. Herris
Headquarters
Korean Communications Zone
Public Information Section

Holland Has Been Doing It

Sir: With much interest I read your editorial, "More Progress in Prestressing" (ENR Jan. 13, p. 96).

As you mentioned, a new technique for prestressing concrete beams is being introduced independently in two parts of the country with the object of securing for the pretensioning method the major advantages of post-tensioning; namely, the draping of tendons in a vertical curve. It is perhaps worth noting that this same technique has been developed in Holland for the past couple of years and that one concrete plant is now producing such beams on an industrial scale, having standardized their section to enable use of standard forms.

J. J. Bouvy
Technical Director
N. V. Ingenieurs Bureau
voor Industrie Service
The Hague, Holland

CALENDAR

Associated General Contractors, Roosevelt Hotel, New Orleans, La., March 14-17.

New York State Association of Highway Engineers, Hotel New Yorker, New York City, March 23-25.

Southern Municipal and Industrial Waste Conference, College of Engineering, Duke University, Durham, N. C., March 31-April 1.

Regional Construction Conference, sponsored by the Cleveland Engineering Society, Cleveland, Ohio, April 11.

Concrete Reniforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., April 11-16.

Conference on Biological Waste Treatment, Manhattan College, New York City, April 13-15.

Building Research Institute, annual meeting, Princeton, N. J., April 18-19.

National Engineering Conference of the American Institute of Steel Construction, Hotel Muehleback, Kansas City, Mo., April 18-19.

LATEST NEWS ON LORAINS!

LORAIN 26

HEAVY DUTY 3/4-YD.
15 tons as a Crane

- ★ Greater Crane lifting and working capacities.
- ★ 19 ft. Shovel Boom for greater reaches.
- ★ 19 ft. Hoe Boom for deeper digging.
- ★ Much Greater Weight—over 47,000 lbs. as a shovel.
- ★ "E-Z" Action Operating Levers.
- ★ Hydraulic Power Crawler Controls.
- ★ More Power — plus non-stall, no-shock Hydraulic Coupling power take-off.
- ★ Newly-designed, sturdier, wider 2-speed Crawlers with 29" wide treads.
- ★ Sturdier strut-type Turntable Bed.

LORAIN 25

GENERAL PURPOSE 3/4-YD.
Up to 12 tons as a Crane

This general purpose 3/4-yd. machine is a real speedster, readily adaptable to all-around 3/4-yd. service. Fully convertible to 5 front ends. The crawler is 12'6" long. Now available as a crane with lifting capacities of 10 and 12 tons.

LORAIN 15

HEAVY DUTY 1/2-YD.
Up to 10 tons as a Crane

This is your best buy in the 1/2-yd. class — as great a value as the "26". Includes the new fatigue-reducing, output-increasing Lorain "E-Z" operating controls. Now available in crane capacities of 8 and 10 tons.

Here's a heavy-duty 3/4-yd. machine any way you look at it! From its newly-designed, 2-speed crawlers to its new longer booms for even greater operating ranges . . . with its greater weight and increased power . . . it's a real "workhorse" for the toughest kind of 3/4-yd. service. Check this partial list of new features and decide now to see your Thew-Lorain Distributor for the full facts.

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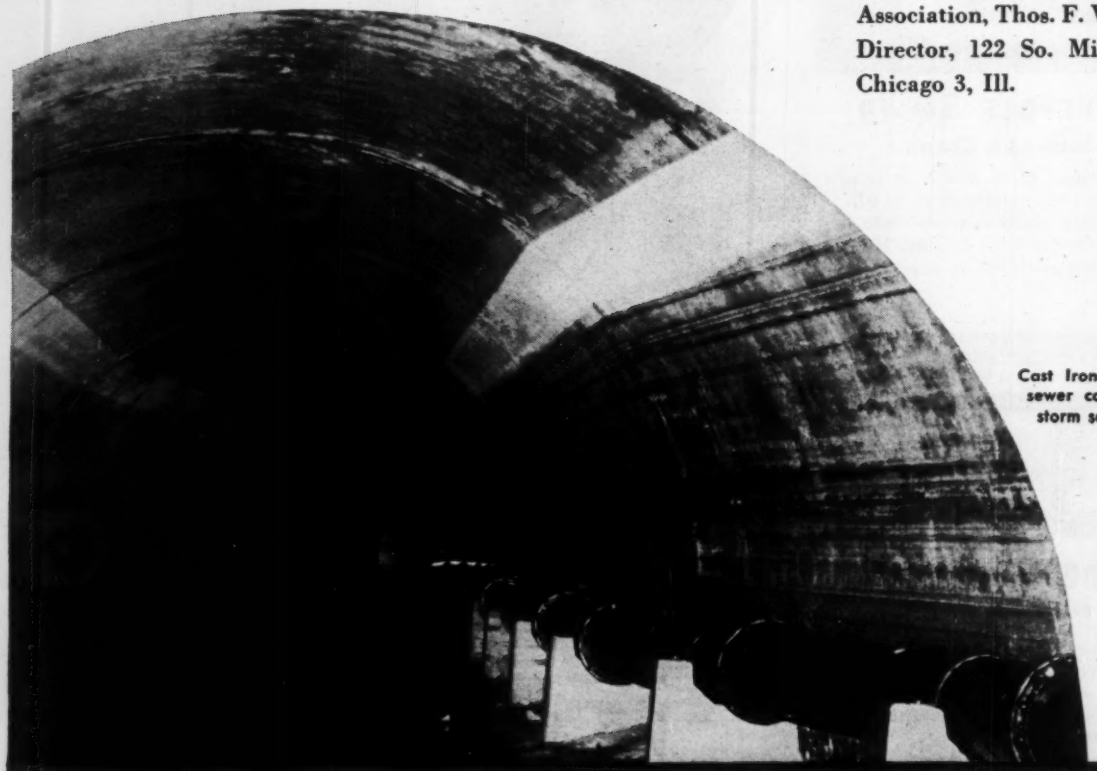
Industrial waste and other piping for large manufacturer in suburban Chicago, Ill.

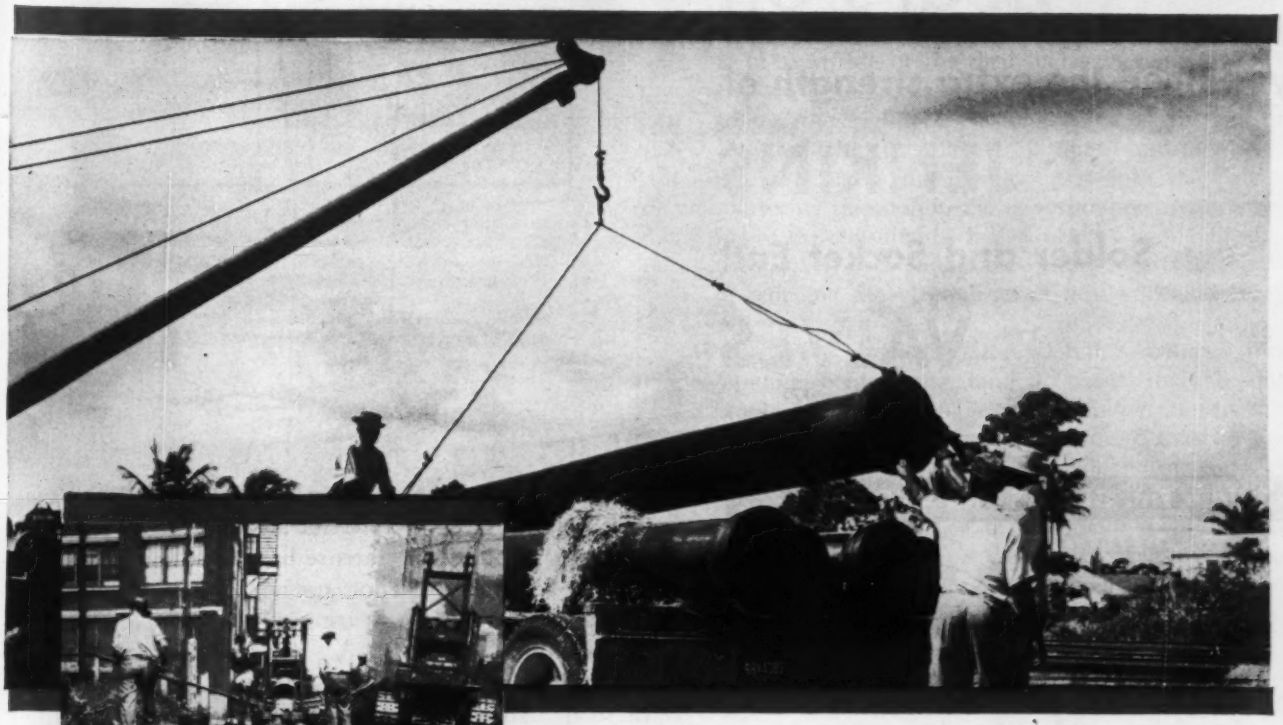
Cast iron pipe has been famed for centuries as a rugged material with proved ability to withstand beam, compressive and shock stresses. Today's *modernized* cast iron pipe—centrifugally cast—is even tougher, even stronger and more uniform in quality. Its effective resistance to corrosion, plus high strength factors, ensure long life, underground or underwater. When an engineer needs a tough pipe for tough requirements, his first and last thought are usually: *specify cast iron pipe.* For information write Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.



Cast Iron Pipe relief sanitary sewer constructed in existing storm sewer: Tulsa, Okla.

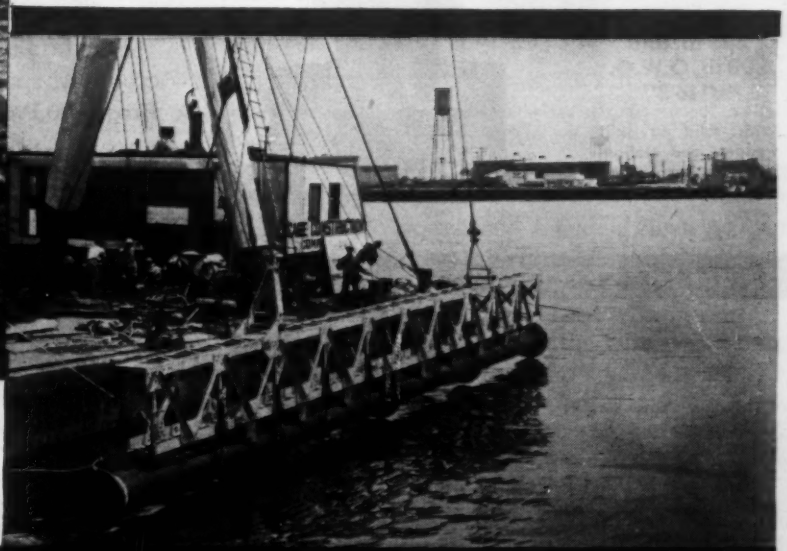
CAST IRON PIPE

TOUGH requirements



Unloading 16" Cast Iron Pipe for water supply system at Ft. Lauderdale, Fla.

Installing Cast Iron gas main in Chicago's North Side.



Cast Iron ball-and-socket joint water supply line being installed in channel bottom between Terminal Island and outer Los Angeles harbor.

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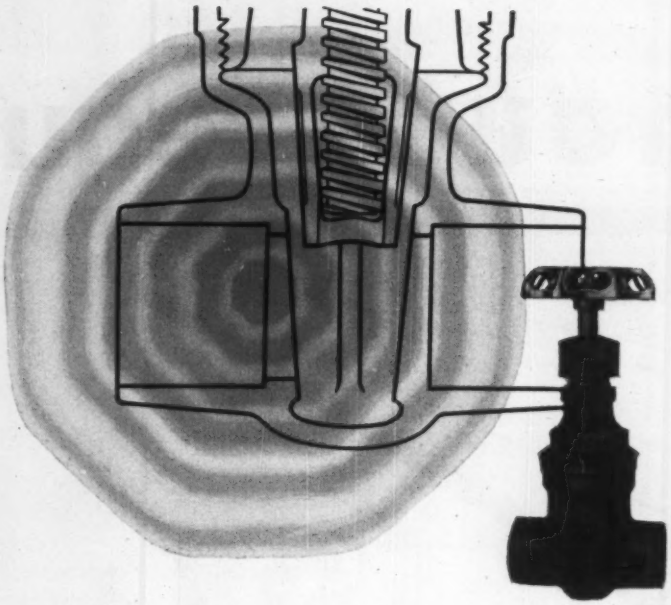
Solder and Socket End

VALVES



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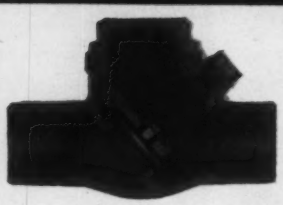

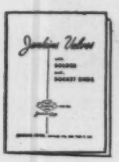

NEW BULLETIN Lists all Jenkins Solder End and Socket End Valves and gives complete instructions for soldering and brazing. Ask for Solder-Socket End booklet.

The "light-duty" look of copper tubing installations is deceiving. Valves must provide an accurate fit to tubing and *hold it* under the intense heat of soldering. And, because flexible tubing does not afford the rigid support of standard pipe, valves must withstand unusual strains in operation.

Jenkins Solder End Valves are engineered to meet these demands with strength to spare. High tensile bronze castings have liberal dimensions for extra rigidity. Smooth, clean bores assure accurate fit, easy soldering, positive seal to types K, L, and M Copper Tubing.

For faster, trouble-free installation, and lasting economy, specify Jenkins Solder End Valves. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS Socket End Valves

for Class B or IPS Tubing

Jenkins bronze valves with socket ends for silver-brazing are made in Globe, Gate, and Swing Check patterns to control compressed air, hot oil, and similar fluids in tubing hookups where specifications call for permanent, leakproof joints. Complete information in the Bulletin offered below.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

BLIMEY, WHAT'S THIS—Consulting engineers are thinking of recommending a reverse traffic flow for the proposed Old Dominion Turnpike in southwestern Virginia. Traffic that normally would move on the right-hand side of the dual highway would travel on the left-hand side and vice versa. Purpose would be to put the high-speed passing lanes on the outside, thus reducing the danger of out-of-control vehicles plunging across the dividing strip into the path of motorists traveling in the opposite direction. According to the consultants, J. E. Griener Co. of Baltimore, the idea has been endorsed by safety experts as a means of reducing the possibilities of head-on collisions.

WORD TO THE OVER-ANXIOUS—Ontario road-building contractors stand to have their bidding privileges curtailed, if they bid on more projects than they can handle. "We mean to insist that no firm submit tenders for more work than it can complete promptly and efficiently," warns Ontario's Highway Minister. The practice of over-bidding already had come under fire from a committee that investigated irregularities in the province's highway department last year.

SPORTSMEN SATISFIED—California sportsmen feel that planners of the $1.6-billion Feather River water project (see page 21) have their best interests at heart. According to the state department of fish and game, regulation of the upper basin of the river is designed to maintain 122 mi of stream at proper levels for fish life and recreation.

AXLE-MILE TAX STICKS—Seven out-of-state carriers last week lost out in their attempt to upset Ohio's controversial axle-mile tax law. A State Board of Tax Appeals decision held that reciprocal agreements entered into by Ohio and other states in 1935 did not cover the highway use tax—a finding on which one member of the three-man board dissented. To the further argument of the carriers that state officials were obligated by provisions of the axle-mile tax law to make reciprocal agreements, the board replied that it lacked the power to order them to do so. The carriers were appealing an order issued in August 1954, by Ohio's Tax Commissioner, requiring them to pay tax assessments amounting to about $214,000.

FLOOD DAMAGE DOWN UNDER—Australia will have to rely heavily on imports of building materials, particularly steel, cement and pipe, in order to cope with the reconstruction job created by the devastating floods in its southeastern area. High water still precludes an accurate inventory of damage but communications and water control facilities are known to have sustained heavy blows.

Giant crops **of microscopic algae . . . rich in vital food elements . . . grown under the sea to help feed a hungry world. Scientists say it will come.**

100 years from now... WE'LL "FARM" THE SEA TO FEED A HUNGRY WORLD!

Hard to imagine. But in the fabulous world of tomorrow, there'll be one familiar note: water and gas will still be carried by the dependable, cast iron pipe laid today. Over sixty American cities still use cast iron water and gas mains a century and more old. And today, U. S. Pipe...centrifugally cast and quality-controlled from mines to blast furnaces to finished product...is even tougher, stronger, more durable.

U. S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

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A wholly integrated producer from mines and blast furnaces to finished pipe.

WASHINGTON OBSERVER

A plan to take rivers and harbors work away from the Corps of Engineers is being considered by the Administration. The Bureau of the Budget working with Hoover Commission officials, is reported to be readying a proposal to create commissions which would be empowered to collect tolls for those using every navigable river in the U. S.

Presumably, funds collected would be made available to the new commissions for financing future work on rivers and harbors.

New commissions would control 79 projects now under construction (estimated cost, $1 billion), and would supervise plans of 347 projects in the planning stage (estimated cost, $1.3 billion).

Such a plan is bound to have tough sledding in Congress. Congressmen like Rep. Robert E. Jones, (D., Ala.), a member of the House Public Works Committee, are already organizing opposition.

Corps of Engineers will also vigorously oppose the plan when the time comes.

A recommendation for tolls on the Delaware River has already been openly discussed. President Eisenhower has said that such an idea might be feasible.

•

Broad expansion of the Davis-Bacon Act on prevailing wages is being pushed in Congress. It is late for such an ambitious program to have too good a chance this year, but the idea is planted, and so should be watched for further development in wages and hours legislation.

The big change would require contractors on local or state projects that have any kind of federal assistance to pay "prevailing wages" to their workers. Now, Davis-Bacon wages are required only on big federal works such as dams, military installations, and so on.

The proposed law would cover federal-aid highways, FHA guaranteed housing, VA guaranteed housing, REA loan programs. Davis-Bacon affected about $4.5 billion of construction in 1954; the changes would increase that by some $9 billion.

•

Labor Secretary Mitchell would get enforcement power, which now lies with the various federal agencies doing the contracting. He would be required to predetermine prevailing practices regardless of hours of work and overtime—the eight-hour law would require time-and-a-half for work above eight hours a day and 40 hours a week. Present law requires overtime only for work above eight hours a day.

•

Building trades restrictive practices are hit in a new antitrust report. A long-awaited Administration-sponsored study of the antitrust laws puts the finger on practices that seemingly can't be reached by either the antitrust laws or the Taft-Hartley Act.

The report by 60 antitrust experts cites market control deals between unions, builders and manufacturers. Among the examples listed: Glaziers have threatened to strike if builders use pre-glazed window sash, unless the glazing was done in a union shop. The report—due to be released sometime this month—reviews in detail the confusing legal situation wherein some such practices seem to be violations of the Taft-Hartley or antitrust laws—while others do not.

Report's only recommendation here is that laws should be made to reach situations that now aren't covered.

THIS QUARRY HAS STANDARDIZED ON "U. S." BELTING FOR 26 YEARS

This U. S. Matchless Elevator Belt has already delivered over 3 million tons of crushed rock.

Year after year, for 26 years, the owners of this rock quarry in Ohio have stuck to U. S. Rubber Conveyor Belting. Before 1928, the owners had tried other belts, only to find that they couldn't stand the gaff. The "U. S." belts kept output *up* and maintenance costs *down*. Furthermore, the quarry owners found that the *quality* and *long life* of "U. S." conveyor belting was also present in other "U. S." products—U. S. Matchless Elevator Belting, Rainbow® V-belts, and air hose.

Such reports are commonplace from aggregate plants that use "U. S." products. In addition to the quality of the product itself, there is the "U. S." 3-way engineering service, in which "U. S." engineers work hand in hand with the plant engineers and the designers of conveyor equipment to turn out a well organized, efficient system.

Give your materials handling problem, large or small, simple or complex, to any of the 27 "U. S." District Sales Offices or write address below.

U. S. Rainbow V-Belts on 250 HP motor driving the primary crusher. This is very rough service, yet the belts show no sign of wear after 5 years' work.

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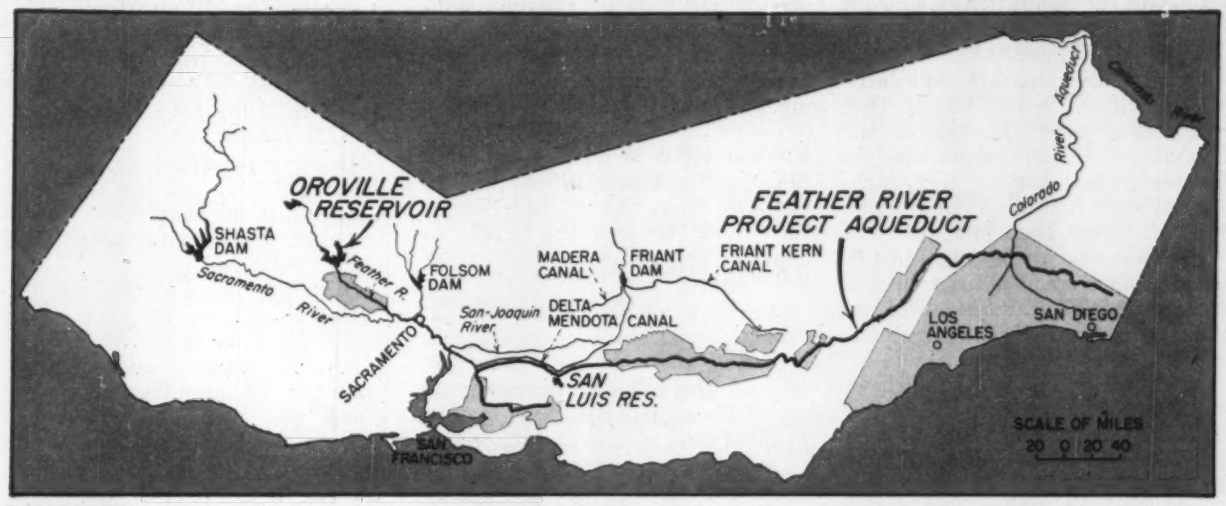


CALIFORNIA studies a plan to send water from the northern part of the state nearly 600 mi to serve central and southern sections (light shaded areas). It's an effort to look ahead and make sure of . . .

Water to Meet the Need 30 Years From Now

Californians face a history-making decision on one of the biggest, most far-seeing water resource developments ever conceived – the Feather River project.

After three years' study, the state's Division of Water Resources under State Engineer A. D. Edmonston has declared Feather River feasible. The report leaves it squarely to the California legislature–and, in the longer run, to the people of the state –to decide how far and how fast to push ahead with this $1.6-billion program.

Feather River is a giant program.

- It would be by far the largest construction project ever undertaken by a state–larger than even anything the federal government has yet undertaken.
- It would involve construction of the world's biggest concrete dam–higher than Hoover Dam and more massive than Grand Coulee Dam.
- It looks ahead 30 years to anticipate the water needs of one of the fastest growing sections of the U. S.

Feather River would be strictly a state project. The report recommends that the state legislature place before the people of the state a $1.5-billion general obligation bond issue to finance the work. No federal aid is contemplated.

The report proposes construction of a 3.5 million acre-ft reservoir on the Feather River in northern California to impound water for transfer by natural river courses, canals and tunnels to large areas of the central and southern part of the state. The project ultimately will carry 1.8 million acre-ft of water to the southern part of the state each year.

The report urges an immediate appropriation of $16 million for right-of-way acquisition and preparation of detailed designs. Construction could begin next year, the report says.

"This is the first step in a great, comprehensive plan for statewide development of California's water resources," Edmonston said in presenting the report. "The time has arrived when the state must take the leadership in developing an adequate water supply."

• Prospects–The program has the approval of the Metropolitan Water District of Southern California, the agency responsible for delivering Colorado River water to the coastal areas of the southern part of the state. That agency has called Feather River the logical next step to provide the water that will be needed after California has exploited to the fullest its Colorado River rights.

Other southern California water agencies agree. They say the state will have reached the capacity of its present water resources in about 20 years.

It's hard to predict how the state's legislature will react to the recommendations in the report. There is strong support for the project in the legislature. In its last three sessions, the legislature has appropriated more than $2 million for feasibility studies. And now there are a number of state civic leaders on record requesting the governor to call a special session of the legislature later this year to consider Feather River and other water resource legislation.

But there will be some opposition, too. At least one influential legislator already has announced he will oppose Feather River in favor of a barrier across the north arm of San Francisco Bay. And some members of the California Water Project Authority have suggested that a review of the report be made by outside engineers–this could further delay action by the legislature.

The Feather River project, as outlined in the report, includes three major features.

• Oroville Dam and power plant–Plans call for a concrete gravity dam to block the Feather River. The dam would be 730 ft high–20 ft higher than Hoover Dam–and would require 14 million cu yd of concrete–3.5 million more than was used in Grand Coulee Dam, the largest concrete dam to date.

The power plant would have an installed capacity of 440,000 kw. That would not be enough to operate the pumping plants on the aqueduct so additional power would have to be purchased. The dam would have two

. . . Feather River project

after-bay structures for re-regulation. On the basis that work does get under way next year, the construction program calls for completion of Oroville Dam by 1963.

• **Feather River project aqueduct**—Water released from Oroville Dam would flow down the Feather and Sacramento River channels to the Sacramento-San Joaquin River delta area, as water from the Central Valley Project's Shasta Dam now does.

The water then would be lifted by a series of pumping plants to a total elevation of 3,357 ft. Many of the pumping plants would be built of such capacity as to operate entirely on off-peak electric energy, mostly purchased from private companies.

Total length of the conduit from the delta area to a spillway tributary to Barrett Dam in San Diego County would be about 585 mi. Included are two tunnels totaling 10.5 mi in length to take water through the Techachapi Mountains.

The acqueduct is programmed for increment construction, with first water delivery to San Diego County in 1976, when it is expected that existing sources will be used to capacity.

The acqueduct will have capacity to delivery annually 1,490,000 acre-ft to the central San Joaquin Valley area, 350,000 acre-ft to southern San Joaquin Valley, 240,000 acre-ft to central California coastal valleys and 1,800,000 acre-ft to the southern California region.

• **San Luis Dam**—To provide for regulation of water flow along the aqueduct, a number of fore-bay and after-bay reservoirs are planned at the pumping plants. Biggest of these would be the reservoir which would be created by the San Luis Dam in Merced County.

San Luis Dam would be a 68-million cu yd earth-fill structure with a maximum height of 310 ft and a reservoir capacity of 2.1 million acre-ft. By using surplus winter flows in the delta region, water from San Luis reservoir could be delivered to San Joaquin Valley areas by 1959.

The report suggested financing by general obligation bonds. It points out that revenue bonds would carry a higher interest rate and an issue of the size needed might exceed the capacity of the revenue bond market.

With a 40-year bond redemption period, annual project costs would exceed annual revenues for the first 40 years of the project's life. These excess costs would have to be repaid from the general fund of the state. For about 30 years, the cost to the state's general fund would be in excess of $10 million. The maximum would be nearly $23 million. After that, annual revenues to the state would mount rapidly, eventually reaching $60 million.

• **Water rights in question**—In addition to the legislation required to authorize and finance the project, there must be legislative action to clear up a ticklish legal problem of water rights.

A recent opinion of the state attorney general gave pre-eminence to the water rights of the "county of origin." This will make it necessary to amend the existing water laws in order to afford areas of export satisfactory assurance of continuity of supply from the project.

The studies included consideration of two additional routes for the Feather River project aqueduct. One, called the long tunnel route, contemplates a 26.7-mi-long tunnel through the Tehachapi Mountains. The other, called the coastal line, would take water through Santa Barbara County to Los Angeles County. The report points out that neither of these routes would provide the same degree of service that the recommended route would give.

Says Buy CVP

California official urges state to buy big water project for $221 million

California State Engineer A. D. Edmonston has recommended that California buy the Central Valley Project from the federal government for $221 million.

His recommendation was based on a four-year study and was submitted in a report to the State Water Project Authority. The authority passed it on to the legislature.

There was no indication whether the federal government would accept the $221-million figure. Edmonston said federal officials seemed more interested in a $268-million price. The federal government has invested a total of about $600 million in the Central Valley Project.

With interest on the bonds the state would have to issue to finance the purchase, Edmonston said the total cost of the acquisition would be $420 million. He called the purchase "in the best interests of California" and urged the legislature to appropriate funds to continue negotiations with the federal government.

Opposition to the purchase is strong. Gov. Goodwin J. Knight opposed it in his message to the legislature last month, and a number of legislators are known to be against it.

California freeway dives into mountains

The Golden State Freeway ties U. S. 99 (lower right) to Sepulvada Boulevard (lower left) north of Los Angeles. The 3-mi, $3.3-million job is nearly complete. It is being built by Griffith Co., Los Angeles, for the California Division of Highways.

Turnpike Troubles

Engineers defend inland Florida route against Jacksonville opposition

Jacksonville business interests are up in arms over tentative plans to build Florida's state-long turnpike along an inland route that would by-pass the city by about 15 mi.

The Florida Turnpike Authority recently recommended an inland route of 276 mi at a cost of $207 million (ENR Feb. 10, p. 23).

Jacksonville's bitter protest over the inland route proposal was expressed at a hectic mass meeting to which three engineers prominently associated with the project were invited to answer questions. The engineers were Sam Brown, partner of Coverdale & Colpitts, traffic consultants; Reuben Bergendorf of Howard, Needles, Tammen & Bergendorf, the turnpike authority's consulting engineers; and Sam Turnbull, chief engineer of the turnpike authority.

Opposition from Jacksonville interests was based on the contention that an inland route would take traffic away from city's not-yet-completed $60-million expressway system which depends on two toll bridges to meet its bond obligations. Coupled with this was the complaint that the city stood to lose general economic benefits.

Bergendorf reminded the group that not a single city in the country has a turnpike running through its urban areas—primarily because the land acquisition costs are prohibitive. Then, he cited the unique case of Tulsa, which has a terminus of the Oklahoma Turnpike at one end of the city and will have an extension built from the opposite end, creating a new traffic problem for city officials to solve.

The engineers also sought to placate strong Jacksonville sentiment against building any turnpike beyond the already authorized "bob-tail" toll road from Hollywood in the Miami area to Ft. Pierce, for which $74 million in bonds soon will be offered. Those arguing against a new turnpike contended that the four-laning of U. S. 1 between Jacksonville and Miami would serve the state's traffic needs.

Brown told the disgruntled group that all experience thus far shows that toll roads generate new traffic and decrease accident rates. He noted that toll receipts prove a predicted 35% gain in New Jersey Turnpike traffic in three years was 20% to 25% too conservative.

Bergendorf noted that the Florida fatality rate on U. S. 1 during 1951 was 17.2 per 100 million miles of travel as against 2.1 on the principal toll roads. He also cited 13 fatalities in one year on U. S. 1 in Maine as compared to only one on the parallel Maine Turnpike.

"It is not a question," Bergendorf told his listeners, "whether you want turnpikes. Unless you open up new modern highways you will have created a Frankenstein out of the modern automobile."

The sectional pride that promises to make the turnpike issue the subject of a highly spirited debate in the legislature next month was exemplified at the mass meeting by such comments as: "Why sacrifice the rest of Florida in order that tourists may be funneled down to Miami?"

Toll Revenue on Turnpike Declines for First Time

Passenger car travel on the Pennsylvania Turnpike increased more than 29 million miles last year, but total revenue for the year dropped about 1.1%. It was the first year that revenue has failed to show a gain over the previous year.

The Pennsylvania Turnpike Commission said a drop in truck and bus travel accounted for the lower revenues. Commercial vehicles pay approximately four cents a mile; passenger cars pay only about one cent a mile.

The commission's official summary for the year 1954 showed that 12.6 million vehicles traveled 1.1 billion revenue miles on the 360-mi toll highway during the 12-month period.

Gross revenues from tolls amounted to $21.9 million, and receipts from other sources totaled $1.2 million to make total revenue for the year $23.1 million. In 1953, toll revenue alone amounted to $22.1 million.

Truck travel dropped from 302.6 million miles in 1953 to only 284.1 million miles in 1954, bus mileage slipped from 6.3 million miles in 1953 to 5.9 million miles in 1954.

The summary for 1954 showed that an average of 6,127 trucks, 150 buses and 28,340 passenger cars used the turnpike daily. The average trip of a passenger car brought a toll of 88 cents; a truck, $5.61; and a bus, $4.11.

The average daily revenue from trucks was $34,400; from buses, $616; and from passenger cars $24,889. Trucks and buses paid 58.5% of all toll revenue in 1954 compared with 61.1% in 1953.

The commission said its figures indicated that the Delaware River Extension, opened to traffic in sections during the last four months of the year, immediately began attracting new patronage and revenue. It also noted that redemption of the bonds that financed the project is years ahead of schedule.

Role of Consultants

North Atlantic highway officials debate use of private firms for design

The use of private consulting engineer firms in an expanded national highway building program was the most discussed problem at the Atlantic City, N. J., meeting of the Association of Highway Officials of the North Atlantic States last week.

There were important disagreements about the need for consultants and their correct function. A. E. Johnson, executive secretary of the American Association of State Highway Officials, told the convention that state highway departments have the men to make the designs.

He said he "resents" the implication that the states must turn to consultants for design services. The manpower pool, he asserted, cannot be enlarged much by giving work to consultants; consulting firms simply would have to raid highway departments for their help. Johnson urged higher salaries for highway department employes and more efficient use of state employed manpower.

J. N. Robertson, AHONAS president, took issue with Johnson. He declared that highway departments will have to use consultants more frequently to meet an unprecedented work load. But he pointed out that the use of consultants should be considered only one part of a program that also should include in-service training, upgrading sub-professional help, wider use of standard designs, increased salaries and intensified recruiting of engineering graduates.

Robert Reindollar, former president of the American Road Builders Assn., said the outstanding problem was to convince legislators that they must pay higher salaries to highway department employes. He said it is uneconomic to build up talents within highway departments to do non-recurring types of work. This sort of work, he said, is the domain of the consultant.

C. D. Curtiss, U. S. Commissioner of Public Roads, agreed with Reindollar about the place of consultants in public road work. "However," he added, "it will be a sorry day when it is necessary to take consultants because highway department pay is not high enough."

Curtiss said he believes the nation's highway system must be substantially enlarged.

The convention named Russell H. McCain, chairman of the Maryland State Roads Commission, the new president of AHONAS.

REA Looks Ahead

Construction will total at least $841 million during next five years

Rural Electrification Administration borrowers have for the first time supplied REA with a five-year forecast of construction. As of now, they plan to build by 1960 at least $841 million of facilities—an estimate REA thinks is conservative.

REA made a nation-wide survey during the last part of 1954. It got such a surprising response—85%—that officials have decided to make it an annual task.

REA asked only distribution-type borrowers for their construction plans. Then it adjusted figures for estimates for all 991 distribution and power-type borrowers.

Of the $841 million borrowers plan to spend on construction, they'll need $635 million for REA (see chart). Whether they'll get all this depends on Congress. Congress must abolish the state allotment formula restricting REA's ability to distribute its loan funds among states, if all needs are to be met.

The outlook is good. Cooperatives think they'll spend during fiscal 1956 about $202 million, of which $156 million would come from REA. REA has estimated it will need $160 million in new loan money—just enough.

This doesn't take into account carryover funds from previous authorizations which REA is permitted to spend next year. This means that there should be a comfortable margin for meeting currently estimated needs, as well as any new co-op demands for cash. Counting carryover, REA should have about $230 million to distribute during fiscal 1956 if its budget request is okayed.

REA officials are pleased with the survey because the 1956 projection matches the agency's budget so closely. But it's interesting to note REA's emphasis on the fact that the survey's results are only estimates. Borrowers may be too conservative in estimating their future needs. In fact, the agency says flatly that loan applications will run higher toward 1960 than borrowers anticipate at the present time.

The survey also shows:

- Borrowers now have about $122 million of their own general funds tied up in electric facilities.
- They'll connect about 125,000 new customers a year each year through 1960.
- They expect to invest about one-fourth of their future loans in improving their distribution systems.
- Applications for loans for generation and transmission facilities account for almost one-third of total anticipated loan needs. This is well in excess of the long-term trend in such loans.
- Systems expect to increase their borrowing to finance consumer appliances and equipment under Section 5 of the Rural Electrification Act.

Governors of Two States Study Delaware River Plan

Pennsylvania's Gov. George M. Leader pledged to cooperate with New Jersey on Delaware River water supply problems in a conference with Gov. Robert B. Meyner of New Jersey last week.

First result of the conference was the introduction in the Pennsylvania assembly this week of enabling legislation for the possible future construction of a storage dam at Wallpack Bend to be supplemented by a diversion dam near Yardley.

Under terms of similar legislation passed in New Jersey, Pennsylvania has until July 1, 1955, to enter a formal two-state agreement for this construction. The New Jersey law calls for diversion of 100 mgd from the river, entitles New Jersey to 30% of the water from the Wallpack project and proposes that the state pay 30% of the cost—unofficially estimated at about $60 million.

Planned REA Construction

	1956	1957	1958	1959	1960
	U. S. Fiscal Years—In Millions of Dollars				
Total construction planned	$202	$182	$162	$144	$151
Loan applications, total	156	151	123	113	92
By purpose					
Distribution*	59	65	49	45	32
System improvements	32	36	30	27	17
Generation	42	30	25	25	27
Transmission	18	14	15	12	13
Consumer facilities	5	6	4	4	3

*Includes substations not a part of system improvements, engineering fees and miscellaneous items.

Bargain in Water

Simple river diversion to give Charleston, S. C. choice industrial site

Charleston, S. C., has always had the ocean at its front door and a year from now can expect to have "oceans of fresh water" at its back door.

Army Engineer approval was given last week for the Bushy Park water supply project, whereby a choice industrial development site can be provided 1.5 billion gallons of fresh water per day for about $3 million.

Bushy Park is a tract north of the city that lies between the navigable Cooper River outlet to the sea and its tributary the Black River. The Cooper provides an ideal waterway at the front of potential Bushy Park industries and by means of a small dam and 3½-mi diversion canal the Black River can be made a back door fresh water supply.

The construction project calls for digging a 3½-mi canal to divert water from the Cooper to the upper reaches of the Black to provide the flow of fresh water; and a simple earth dam at the lower end of the Black River where it now joins the Cooper to prevent salt water from intruding the Black. The 6,000-ft-long dam with 80-ft top width will carry a highway and rail spur into the southern end of the industrial area (ENR Oct. 21, 1954, p. 41). A highway bridge will be built over the canal into the northern end of the area.

The Robert E. Lee Construction Co. of Manning, S. C., is the contractor for the project and has begun preliminary work, including building approach roads. This firm also is involved in financing the project.

Development of the industrial area and financing of the water supply project are under the jurisdiction of a Bushy Park Authority. To enable it to push ahead with the real-estate phase, the South Carolina legislature recently authorized the authority to borrow $300,000 to acquire land for sale to prospective industrial buyers.

Chief of Engineers Assigns Division New Responsibilities

Maj. Gen. S. D. Sturgis, Chief of Army Engineers, has assigned the North Atlantic Division in New York responsibilty for supervision of the eastern ocean district and construction projects in Iceland, Labrador, New Foundland, the Azores, Bermuda and Greenland.

Col. Benjamin B. Talley, North Atlantic Division Engineer, said the move will result in considerable savings to the federal government.

Exit Contractors

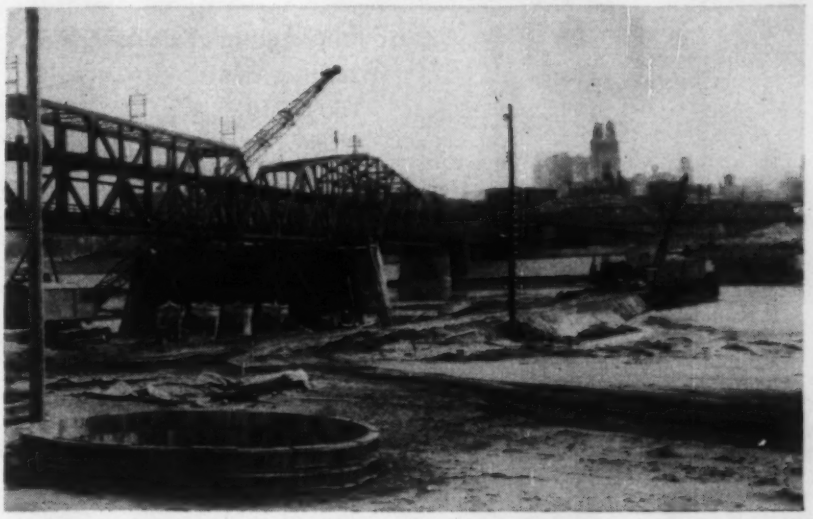
Contractors working on piers for the $13-million Boardway bridge over the Missouri River at Kansas City, Mo., pulled their equipment out in a hurry when warning came of a flash flood with a crest of 13 ft or more. The Guy H. James Construction Co., Oklahoma City, Okla., and Cunningham-Kiewit Construction Co., Omaha, Neb., had built an earth fill from the river bank to the piers to permit construction "from the dry." The fill had been built to a sea level elevation of 72 ft–4 ft above the February 1953, high stage and 6 ft above the highest stage in February, 1952, but still too low this year. The flood was caused by rains and melting snow that broke loose a heavy ice jam all the way upstream to Nebraska.

Enter Old Man River

The crest of the flood hit the next day. Ice-clogged water washed out a 250-ft section of the 500-ft fill. Damage to the piers, however, was negligible. Pier No. 2 was down 37 ft and, with 11 ft of freshly poured concrete on top, was well above the flood level. Pier No. 3 was down only 20 ft, but no water poured in. Work on a third pier had not started.

The Happy Ending

A week later–Feb. 26–the causeway had been rebuilt and work was again under way. The new causeway is 2 ft higher than the original–just in case. A week's work on the piers was lost, but the job was a little ahead of schedule. Damage was estimated tentatively at less than $10,000. The new toll bridge will replace ancient Hannibal Bridge (background).



Upper Colorado

Private utilities in area back Administration plan but pose some conditions

Ten private utilities in the Colorado area are backing the Administration's plan for development of the hydroelectric potential of the Upper Colorado River Basin in the hope their system will grow with the billion-dollar project.

Their arguments were presented to Congress last week when David D. Moffat, vice president of Utah Power & Light Co., appeared before a Senate interior subcommittee. Moffat said the companies want to get into the act, but he made it clear they did not want to compete with the government.

The utilities supported the Administration plan to build Glen Canyon and Echo Park Dams, which would have 1,000,000 kw of combined generating capacity. But they urged the government to utilize their existing distribution systems, wherever possible. They suggested an amendment to which would make it impossible for the government to build lines where utilities already have them in.

It's still too early to tell how the river development plan is working out in the congressional mill. There's a lot of opposition, particularly from water-hungry California, which is downstream from the ambitious project. Conservationists and economy-minded easterners also are lining up for a fight against even the simplest plan to spend money on the river.

Power comes in for its knocks, but it's not the only controversial aspect of the program. Being a non-consumptive use of water, Californians see less danger from the big power plants than from the irrigation projects which dot the Administration's planned remaping of the area. Although the lower basin people have been using less water each year than they're entitled to under a 30-year-old interstate compact, they're afraid a sudden pickup in irrigation in the upper basin will cut their supplies too much to allow for lower basin growth.

It would cost a lot of money to build the dams, particularly Glen Canyon and Echo Park. The conservationists and easterners emphasize costs, as well as the flooding out of natural scenic wonders.

It would take some time to fill the huge reservoirs behind these dams, and users of Hoover Dam power figure they'd be hard put to keep Hoover pumping firmpower while the filling-up process went on.

One of the strongest arguments California is using against Echo Park—the most vulnerable part of the Administration program—is that its power would be too expensive. Raymond Matthew, chief engineer of the Colorado River Board of California, claimed Glen Canyon—the biggest dam, situated at the point farthest downstream in the upper basin plan—is the only financially sound power unit in the whole project. He said it would be capable of producing power which could be sold for 4.3 mills/kwh, but that it's planned to sell at 6 mills to subsidize the less-efficient Echo Park project and surrounding irrigation facilities.

The Senate hearings are expected to take some time. But some sort of a bill should come out of the committee, with favorable chances of passage in the Senate.

On the House side, however, the conservationists are getting together with the politically powerful Californians—who outnumber upper basin congressmen three or four to one—and easterners who cannot benefit from the project. Their campaign will probably kill Echo Park.

N. Y. Firm Gets Contract For Second Hoboken Pier

Construction of a second big pier for American Export Lines in Hoboken, N. J., will begin next month. The Port of New York Authority announced the award of a $5.4-million contract for the superstructure of the new facility to J. Rich Steers, New York contractor.

American Export Lines occupied the first pier—Pier "C"—on March 1. It is 700 ft long and 328 ft wide, the widest pier in the New York port area (ENR Aug. 5, 1954, p. 23).

The new pier—Pier "A"—will be a steel and concrete single-deck cargo pier of the same basic design as Pier "C". It will be 700 ft long and 323 ft wide. It is scheduled to be ready for occupancy in 1956.

Public Administration Given Graduate Status at Cornell

The School of Business and Public Administration at Cornell University is to be raised to full graduate status in July. This change, according to Edward H. Litchfield, dean of the school, will result in an expanded research program and additional faculty.

Other universities that have moved graduate work in public administration out of the department of political science to full-fledged school status are New York University, the Littauer School at Harvard, the Institute of Public Administration at Michigan University and the Maxwell School at Syracuse University.

Governors Split

Some favor and others oppose President's plan to step up roadbuilding

State governors showed divided opinions on President Eisenhower's highway program at hearings before the Senate subcommittee on roads. And the ranking Republican on the subcommittee, Sen. Edward Martin of Pennsylvania, raised further doubts about party backing for the bill.

Two spokesmen for the governors' conference endorsed the Administration plan for financing the $25-billion construction of the interstate system by bond issues of a federal highway corporation. Two other governors opposed the bond issues and favored pay-as-you-go financing instead.

Sen. Martin also proposed financing by traditional methods. He said an increase of 1 cent in the federal gasoline tax and use of other available funds could complete the interstate job in 15 years. A tax increase of 1½ cents, Martin suggested, would complete the program in a shorter time.

Two Democratic members, Senators Richard Neuberger of Oregon and Patrick McNamara of Michigan, joined Sen. Martin in recommending a higher federal gasoline tax.

One of the witnesses, Director A. C. Stoldt of the Oklahoma State Highway Department, agreed that a federal tax increase would be politically feasible and more acceptable than the building of toll roads. But he said a similar increase in state motor fuel taxes could not be enacted in his state.

Vigorous support for the Administration plan came from the American Municipal Assn. Mayor Albert E. Cobo of Detroit summed up the AMA position by saying that the people don't want to wait 30 years for completion of the interstate system; they are willing to pay the added financing costs of the bond issue plan.

But the Association of County Officials attacked the Administration bill. The county officials said they preferred the rival bill of Sen. Albert Gore, Tennessee Democrat. Sen. Gore proposed to step up federal aid for the primary, secondary and urban systems to $1.1 billion a year and also provide $500 million a year on a more liberal matching basis for interstate roads.

The Administration bill conforms closely with a highway plan perviously endorsed by the executive committee of the governors' conference. Last week, Gov. Robert J. Kenno of Louisiana, conference chairman, and Gov. Walter J. Kohler of Wisconsin, who heads the group's highway committee, favored the Administration measure.

State Invites Bids

California will open bids for two construction jobs and $40 million of bonds

California will open construction bids April 21 for two of the three dams and powerhouses in the tri-dam project of the Oakdale and San Joaquin Irrigation Districts. Bids for revenue bonds in excess of $40 million will be opened on May 3. Both bid opening dates are subject to the approval of the boards of directors of the two districts, but that is expected to be automatic.

Bids on all three of the dams were invited in 1953, but higher-than-expected interest rates prevented start of construction. Officials hope for more favorable construction and bond bids this time.

Bids have been invited for Donnells and Beardsley Dams on the Middle Fork of the Stanislaus River in the Sierra Nevada. Each dam will be bid separately, but each bid will include all phases of the work as well as powerhouse equipment. Previously, Donnells Dam was split into separate schedules for dam, tunnel and powerhouse. Completion schedule for Donnells has been stretched over four construction seasons instead of three. Beardsley will require three construction seasons.

Tulloch Dam, the third part of the project, will require only two construction seasons. Construction and bond bids for Tulloch will be deferred, probably until next year.

Donnells Dam is a 288-ft arch dam involving some 250,000 cu yd of concrete. Donnells tunnel is a 7.2-mi, 13-ft-dia horseshoe bore. The powerhouse will have 54,000 kw capacity.

Beardsley Dam is a 280-ft-high 3,000,000 cu yd earth-fill structure. It will have a 10,000 kw powerhouse.

Power from the project will be sold to Pacific Gas & Electric Co. Water will irrigate land in the two districts.

Design was by International Engineering Co., San Francisco. George E. Goodall, Sacramento consulting engineer designed Donnells Dam. Consulting engineer for the irrigation districts is B. W. Goodenough.

New Mexico Measure Fixes Higher Truck Weight Limits

The New Mexico legislature has passed a highly controversial measure which increases the state's truck weight limits to among the highest in the nation. Gov. John F. Simms, Jr., has announced he will sign the bill.

The new law boosts the single-axle limit from the present 18,000 to 21,600 lb. Tandem-axle limits are increased from 32,000 to 34,320 lb. The bill extends to all haulers of unprocessed New Mexico products.

New Mexico Motor Carriers Assn. pressed for the law's passage, contending it would merely extend to all truck operators the same overload privileges granted to haulers of natural products in the state. Opposing the measure were the railroads, a majority of the five-member State Highway Commission, the State Legislative Council, and most of the state's press.

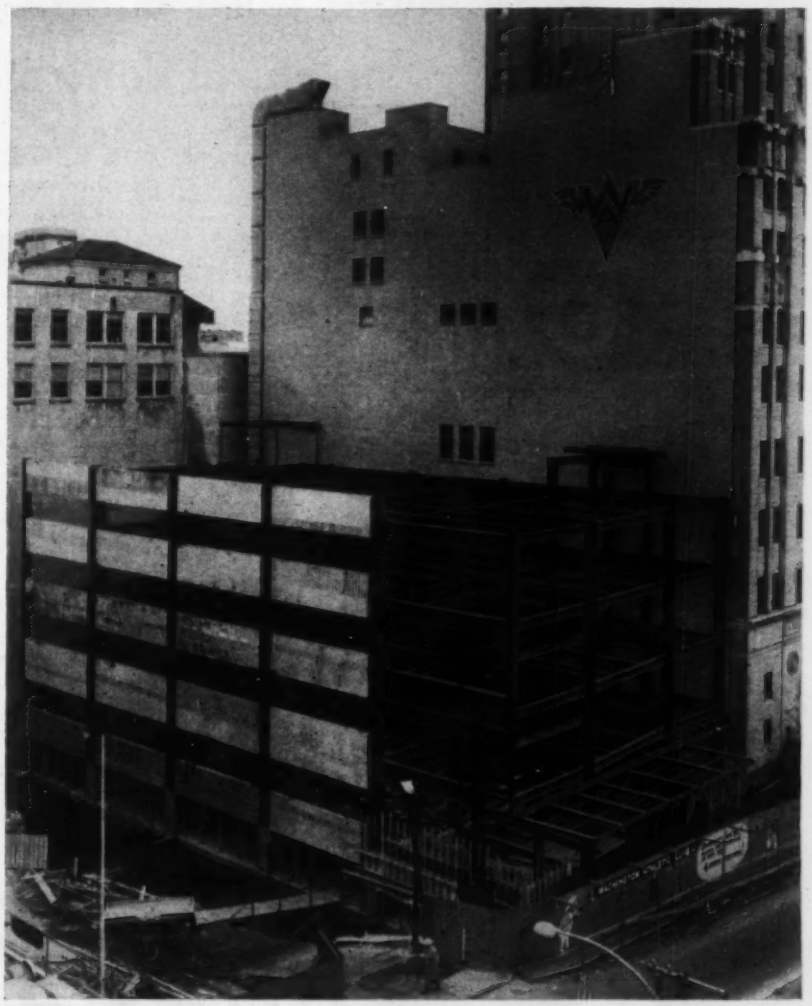
The Legislative Council said the new law would make New Mexico's axle weight higher than Arizona, California, Idaho, Montana, Nevada, Texas, Utah and Wyoming among western states; and would make permissible gross maximum weight higher than those of the same eight states, plus Oklahoma.

Jobs in the News

IRRIGATION PROJECT – Morrison-Knudsen Co., Boise, Ida., has received a $24.7-million contract from the government of Peru to construct the second phase of the Quiroz irrigation project.

SEAWAY JOB–Jack and Jim Maser Corp., Lancaster, Pa., submitted the low bid of $990,900 for the second contract on the U.S. section of the St. Lawrence Seaway. The job involves excavation of 2.6 million cu yd of earth and construction of two dike embankments near Massena, N. Y.

COMMUNITY – Mace Properties, Inc., Arlington, Va., will build a $25-million to $30-million project including 200 homes at Annadale, Va.



Trusses Encased in Concrete Before Erection

Howard S. Wright & Co., general contractor for an addition to the Washington Athletic Club in Seattle, reports "considerable savings" were achieved by encasing steel spandrel trusses in concrete before erection. The concrete work was done in the yard of the general contractor. Then, the 12-ton concrete covered trusses were moved to the job site. Bethlehem Pacific Steel Corp. did fabrication and erection.

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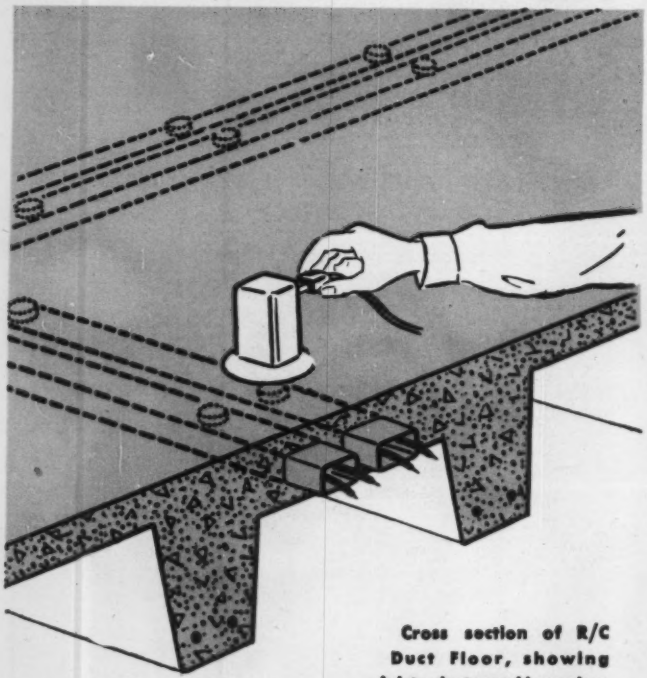

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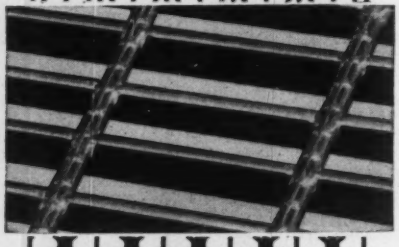

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CITY BY CITY

Bus Terminal Activity

Detroit—One new bus terminal already is scheduled to go up in downtown Detroit and preliminary plans are under way for a second one.

Great Lakes Greyhound Lines has purchased a one-block site at the focal point of the city's rapidly expanding expressway network for a $4-million Greyhound terminal. The building—bordering on the new civic center (ENR Feb. 3, p. 22)—will serve as the hub of all Greyhound inter-city and suburban schedules for Detroit.

The second terminal project is part of a garage plan proposed by a group of private investors. The investors have offered to convert the ground level of what is now Cadillac Square into a Detroit Street Railways bus terminal. In exchange, they want the city to grant a lease for building a 500-car parking garage estimated to cost $1.5 million. Preliminary plans call for two levels of parking above the proposed bus terminal.

Floor plans for the Greyhound depot have not been completed, but some features of the building have been finalized. Architects Arrasmith & Tyler of Louisville, Ky., have designed its low, sweeping horizontal lines to blend with Detroit's new City-County Building, part of the riverfront civic center development that will be located at the rear of the terminal.

The Greyhound terminal, 400 ft by 250 ft and air conditioned throughout, will contain a full basement, a main level and a mezzanine plus parking deck to accommodate 700 automobiles. It will include a restaurant, cocktail lounge, drug store, shops and service station.

One innovation in terminal design is a loading lobby between the docks and main waiting room. In this area passengers will check and claim baggage and board coaches from loading docks.

Buildings now located on the Greyhound terminal site will be razed as soon as present tenants vacate. Construction should be completed approximately a year and a half after the contract date.

Variety of Bids

Phoenix—A wide variance in bids—all over the engineering estimates—has caused a slow-down on a Phoenix water main installation project.

City engineering estimates for the job was $215,000. But bids ranged from a low of $240,000 (Kitchell-Phillips, Phoenix) to $433,458 (Raymond Construction Co., Goodyear, Ariz.).

The project involves installation of water mains and about 150 new hydrants, part of them slated for highly congested uptown areas. Some of the water mains to be replaced have been in service since 1905.

Some $200,000 worth of material supplied by the city is already in stock for the project. The contract calls for installation of this material in 9 mi of water mains varying in size from 6 in. to 12 in., and in 3 mi varying from ¾ in. to 4 in.

Midtown Modernization

Philadelphia—A new $14-million midtown apartment project will remove a blighted area south of the Benjamin Franklin Parkway—and will boost city tax revenue nearly $200,000.

Under an agreement with the Philadelphia Redevelopment Authority, Parkway Triangle Corp. will erect four 18-story apartment buildings on the nine-acre tract. First of the 880 dwelling units will be ready for occupancy by summer, 1956.

The redevelopment authority will acquire the property by condemnation at an estimated cost of $1.6 million and rent it to the redeveloper for $75,000 a year. At present the city nets only $18,000 from the site.

Financing Park Facilities

Los Angeles—A $40-million bond issue for general park and recreational facilities has been approved by the City Council and will be placed on the May 31 municipal ballot.

The major construction item listed is a $4.5-million baseball stadium for Chavez Ravine. Other proposed facilities include parks, beaches, swimming pools and clubhouses.

Port Plan Approved

Buffalo, N. Y.—As a step toward putting the city in a position to handle St. Lawrence Seaway traffic the Buffalo Port Board has approved a $5.5-million port improvement program.

The preliminary cost estimate was set by Frederic R. Harris, Inc., New York consulting engineers who are making a survey of the port. The sum would finance construction of a 300-ft-wide and 475-ft-long pier; an $800,000 warehouse, plus a number of material-handling installations.

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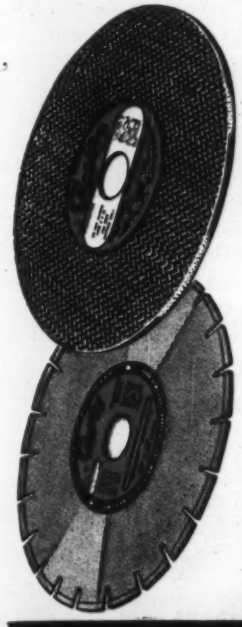

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GM's Newest Fire Protection Really Shines

When the General Motors Corp. decided to erect a 250,000-g water tower to serve its Technical Center near Detroit, first thought was to make it of stainless steel. But the cost was prohibitive. Next best solution—and the one adopted—was to use $\frac{5}{8}$-in. boiler plate, with a bonded finish of $\frac{1}{8}$-in. stainless steel, hot rolled.

This combination, which was specified to be, "Type 304 Stainless Clad on A283 Grade C Steel," produced a strikingly beautiful finish on the tank and its three supporting legs. At the same time it necessitated unusual and careful shipping and erection procedures to keep from damaging the stainless steel surface.

The three-leg, stainless steel design, was chosen for aesthetic reasons; and to blend with the ultra-elaborate selection of materials, architecture and landscaping in the Technical Center.

NOT A SCRATCH—Plastic-clad pieces were erected by welders in soft-shoe.

• **Added fire safety**—The 250,000-gal tower is needed to comply with fire regulations. As a result of the disastrous fire that destroyed General Motors' automatic-transmission plant at Livonia, Mich. on Aug. 12, 1953 (ENR, Aug. 20, p. 28 and Oct. 15, 1953, p. 24) fire underwriters and GM itself have adopted more stringent fire protection measures. One such precaution was to augment municipal water supplies with water towers to insure that an ample supply of water is always available under adequate pressure.

The total height of the water tower is 138 ft. The 250,000-gal tank is ellipsoidal in shape, with a 46-ft horizonal dia and 32½ ft height at center line. Its usable depth, or range in head from high water to low water, is 26 ft. It will carry 142-ft static water head.

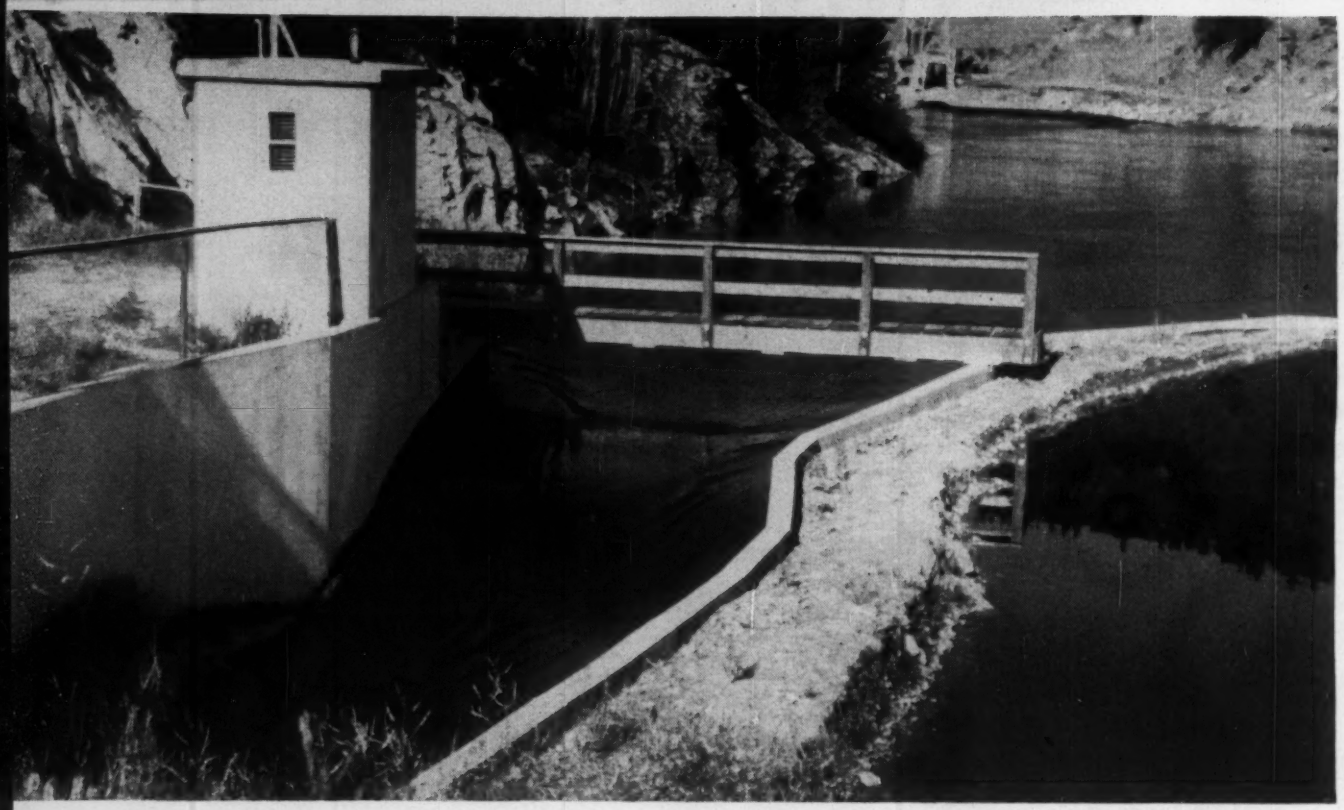
• **Welded diaphragms**—The three 107-ft supporting columns are 5½ ft in dia. One contains the inlet-outlet piping and a ladder furnishing access to the tank on top. Three sets of welded diaphragms near ground line were required to reduce bending stresses in the columns, due to the design wind load. A step-type reinforced concrete foundation supports the all-welded tower. It is 14 ft thick, set a minimum of 5 ft into rock. The bottom diameter is 42½ ft and the top diameter, 24 ft.

• **Careful handling**—Extra careful handling of the stainless-clad sections of tank and columns was required both in transit and during erection. After being formed they were sprayed with a plastic compound; then wrapped in waterproof paper. During transportation to the site, they rested in cradles to prevent scratching of the stainless steel surface.

The plates were welded together to form the various sections, taking great care not to damage the stainless steel. Then the seams were chipped clean of scales. During erection the stainless clad sections were welded together, then wire brushed and etched with acid to produce a satinizing effect. A protective backing was used during welding operations, to prevent splattering of the metal. After welding was completed, portions of the wrapping which had been left on to protect the steel, were removed.

Other precautions to keep from damaging the stainless steel finish during erection included the use of scaffold all the way to the top of the tower. When working on the tank itself, welders and other workmen wore rubber-soled shoes and used a special pneumatic tired carriage to sit on.

Saarinen, Saarinen & Associates, Detroit, were the architects for the Technical Center. The water tower was designed, fabricated and erected by the Chicago Bridge & Iron Co., Chicago.



ADAMS TUNNEL OUTLET in background (El 8258) feeds Western Slope water through Parshall flume, which measures total diversion of the project.

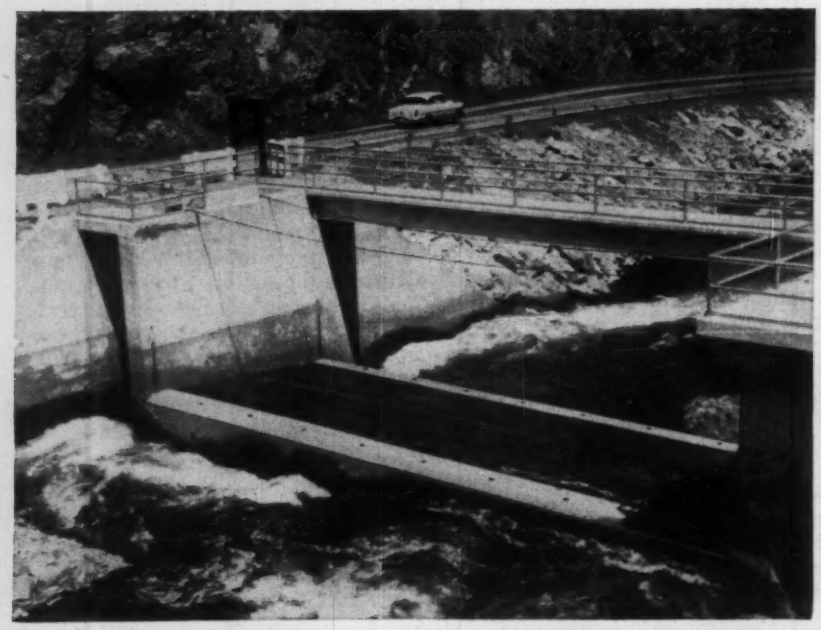
Big Thompson Today

Colorado-Big Thompson project, the trans-mountain diversion that for 15 years was the biggest construction operation in Northern Colorado, today blends handsomely with the mountain grandeur and sage-covered foothills. On the plains to the east, fertile soil can be counted on to yield ample harvests again this season, thanks to Western Slope water that will come through 13-mile Alva B. Adams Tunnel beneath the Continental Divide.

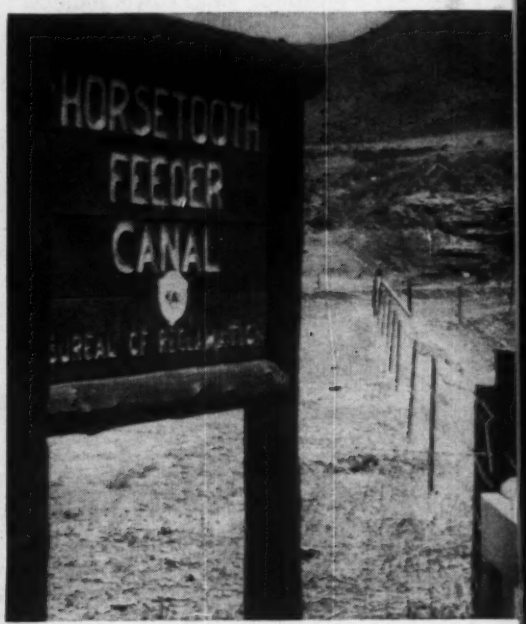
Last year the supplemental water was vital to irrigation. Normally U. S. Bureau of Reclamation can supply 258,000 acre feet from the Western Slope, but in 1954 the share was 300,000 acre feet—a godsend because Eastern Slope water was about 42,000 acre-ft short of the needed amount. Colorado-Big Thompson had saved irrigated lands from crop failure.

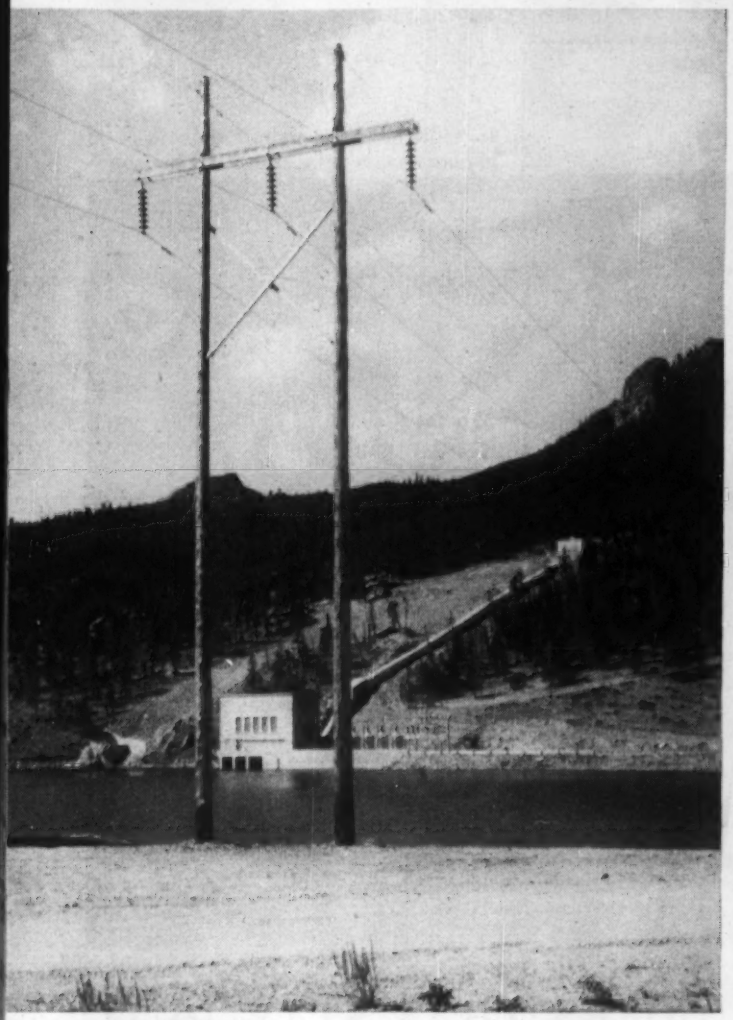
Photos on these pages show a few of the completed Eastern Slope Colorado-Big Thompson features, including two of four completed power plants. Remaining work is mostly on distribution systems.

DIVERSION structure in Big Thompson canyon took irrigation water before power-tunnel system was complete.

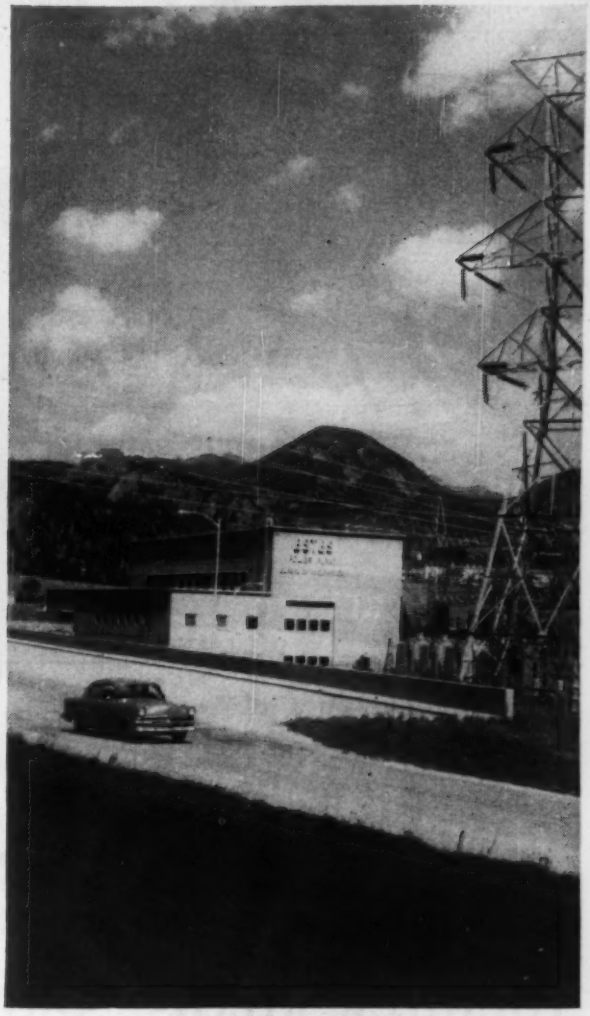


DISTRIBUTION canals and tunnels apportion supplemental water among five tributaries of the South Platte River.



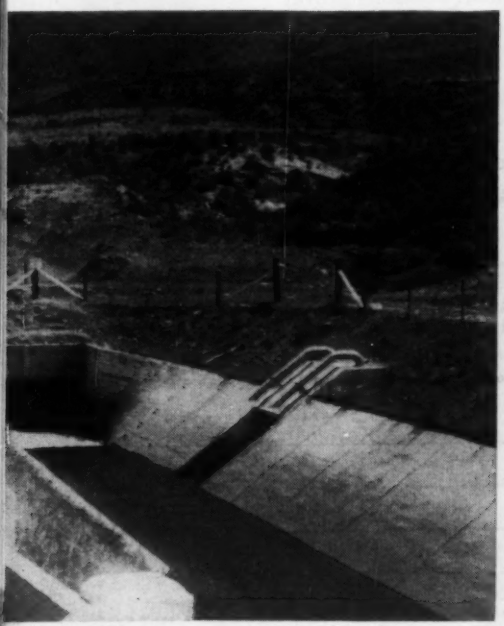


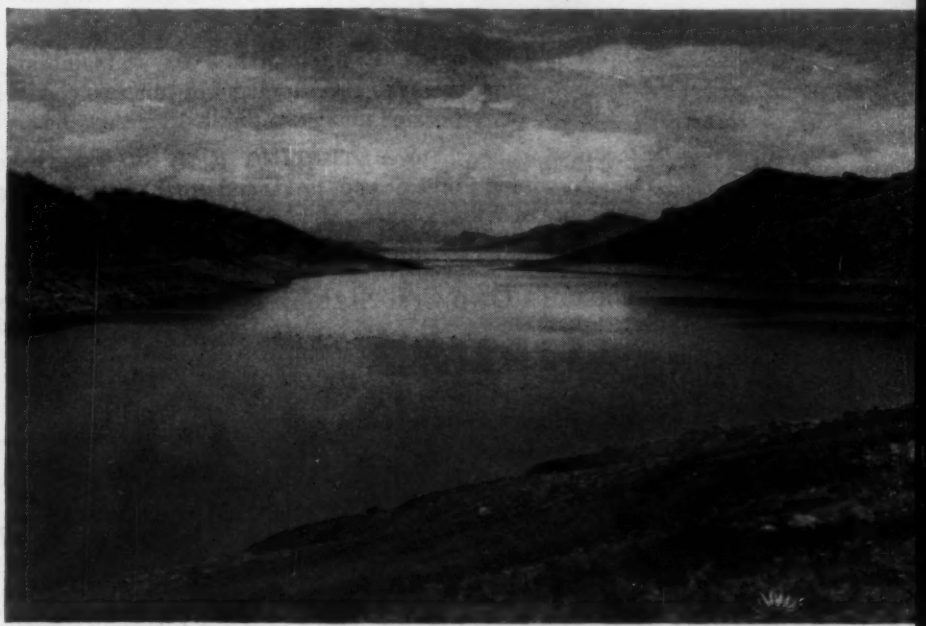
FIRST POWER is made with project water at Mary's Lake, in hills behind village of Estes Park. Elevation is 8035.

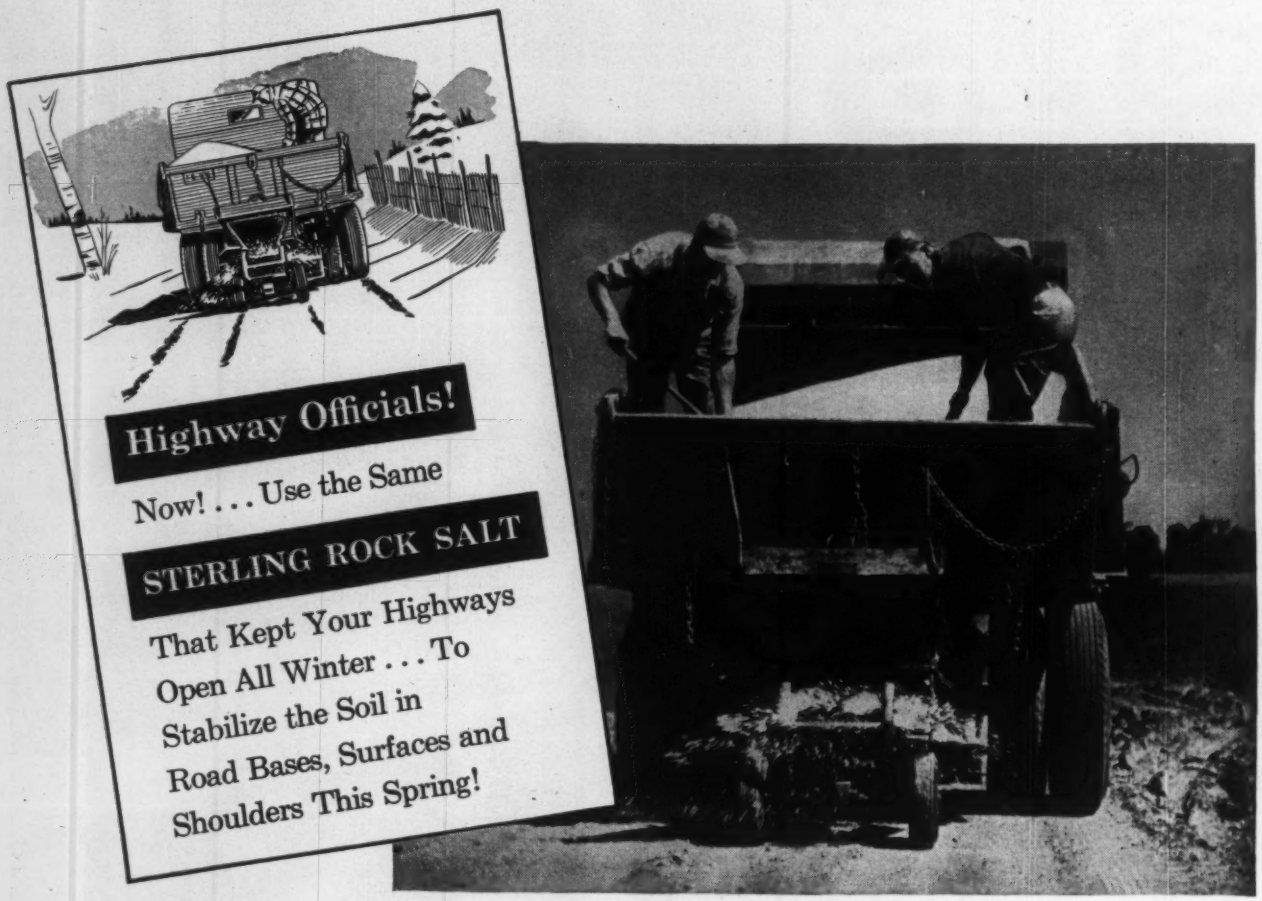


DESCENT to El 7425 brings water to 50,000-kva Estes Power Plant. Two more plants, tunnel-fed, are complete now.

HORSETOOTH RESERVOIR, six miles long, holds water for release to lands in Cache la Poudre River area.



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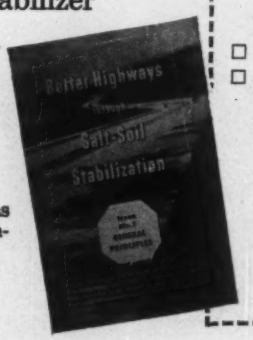

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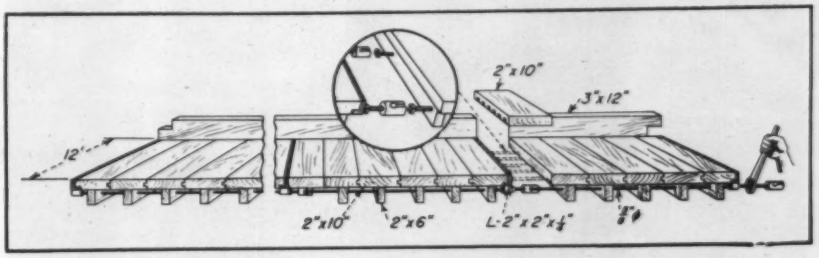
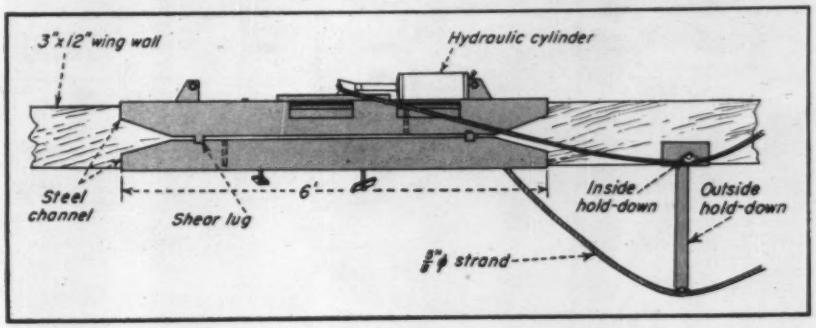
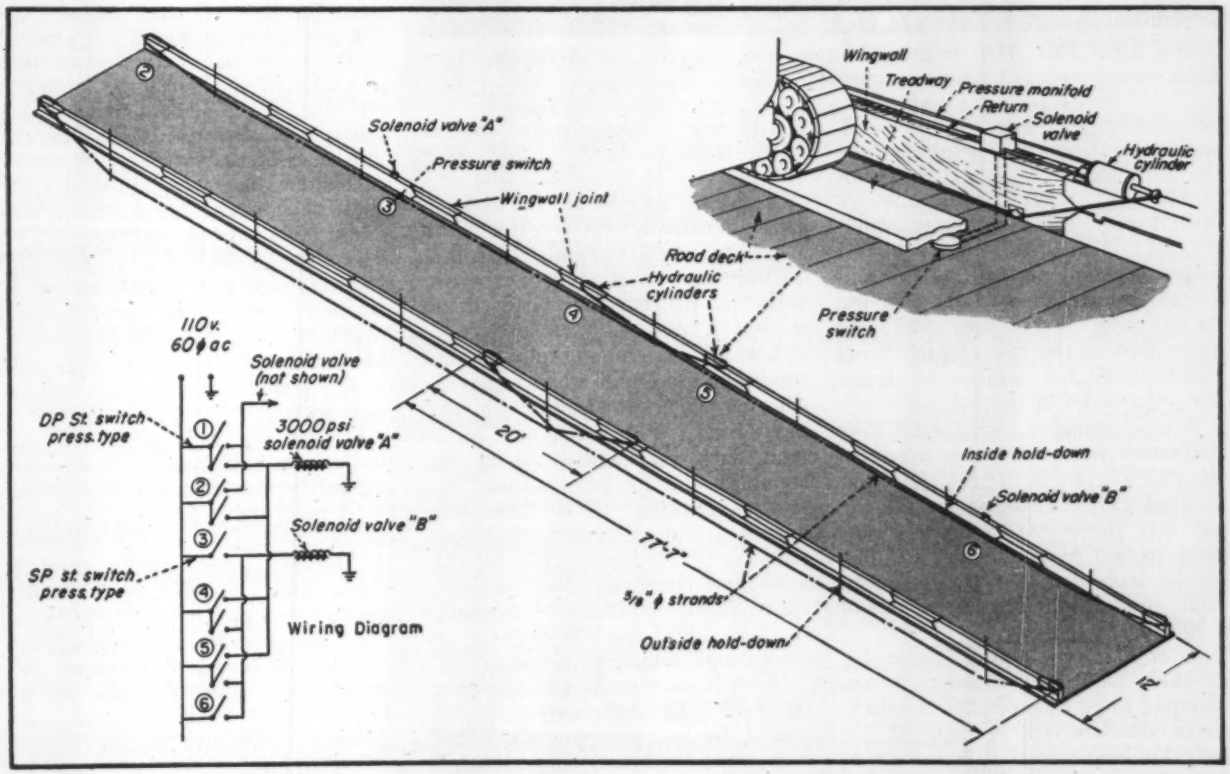
Portable timber road capable of carrying 10-ton vehicles over muddy terrain is composed of T-shaped sections held together with tensioned steel rods. And when . . .

Reinforced with steel channels at wingwall joints and prestressed with steel strands, the road was strengthened to carry 60-ton vehicles. A hydraulic cylinder atop the steel channels is activated by the live load as it approaches, tensioning the strands.

As indicated below, the vehicle closes a pressure switch under the treadway, opening a solenoid valve. This feeds oil under pressure to the hydraulic cylinder to apply the prestress.







How to Move a 60-ton Load Over Soft Ground

R. K. Steele and P. J. Rush
USNCE Research and Evaluation Lab.
Port Hueneme, Calif.

A portable timber roadway, which is prestressed in an unusual way, to transfer vehicles weighing up to 60 tons over muddy terrain has been developed by the Navy's Bureau of Yards & Docks. The prestress required is so large that if it were applied without a vehicle on the road, the wood would fail by excessive bending. So the prestress is varied in both magnitude and location as the vehicle moves along.

Research on this road was initiated because the Navy wanted a lightweight, easily assembled road for transferring combat equipment over unstable mud flats from the beached end of a standard pontoon causeway to firm ground. BuDocks assigned the problem to the U. S. Naval Civil Engineering Research and Evaluation Laboratory at Port Hueneme, Calif.

As an initial development goal, the roadway was to have a capacity of 10 tons. CEREL engineers solved this problem with a timber plank road under constant prestress. Providing a traffic lane 10 ft 4 in. wide, this road, known as Model X-2, weighed only 100 lb per lin ft.

• **Basic road**—It was formed by placing 12-ft-long T-shape sections side by

TANK AND TRACTOR weighing 57 tons cross the mud flats at Laguna Mugu, Calif., over a roadway transiently prestressed.

side. Flanges were tongued-and-grooved 2x10 Douglas fir planks, and the webs, 2x6s. Assembled in groups of five, the T-sections were held together with eight tensioned ⅝-in.-dia cold-rolled steel rods, equipped with a standard nut on one end and a quick-connecting keyhole coupling on the other. A 2x2x¼-in. steel angle was placed at the end of each panel to distribute the prestressing forces along the width of the roadway.

A jeep equipped with a light steel framework transported the panels to the site, where a 2x10 filler plank was inserted between panels to fill the gap over the couplers. Prestress was then applied by tightening the nuts on the exposed ends of the rods until each rod was tensioned to about 5,800 lb.

After four panels were prestressed, a 3x12 Douglas fir wingwall was clamped along each edge of the deck. Since the wingwall is required not only for longitudinal stiffness but to insure buoyancy of the construction, an asphalt-impregnated gasketing tape was inserted between it and the deck as a water seal.

Adjoining wingwalls were connected with a step joint and held together with a ¾-in. steel dowel, to assure transfer of moment and shear. This joint also was sealed against mud and water.

• **Tests measure capacity**—This construction was tested on the mud flats of Laguna Mugu, Calif. There, decomposed organic matter and silt with high water content overlies a bed of sand to a maximum depth of 10 ft. Bearing capacity is low, about 100 psf.

A 144-ft length of the 10-ton-capacity roadway was constructed in a location where the ends could bear on firm sand. Some tests were made with the roadway fully buoyant in water, but most with soil support.

The safe load for the fully buoyant condition was found to be 5 tons for wheeled vehicles similar to a two-axled heavy truck. With soil support in the mud flats, maximum capacity was about 35 tons for both wheeled and tracked vehicles. (Deflections were measured and checked against computed values. It appears probable that a modified Hetenyi analysis for beams on an elastic foundation will predict the response of the roadway over any terrain with sufficient accuracy.)

With loads over 25 tons, however, excessive soil deterioration accompanied by soil pumping was noted. As a result, additional wingwall height was needed to exclude mud. The added height was obtained with little increase in weight by applying canvas curtains with wood battens to the wingwalls.

• **X-2 made a 60-ton road**—Following the successful performance of the Model X-2 roadway, the CEREL engineers concentrated on ways of extending the capacity to 60 tons. In reviewing the tests on Model X-2, the researchers noted that loads up to 35 tons were carried without distress by the roadbed, but the largest loads caused horizontal shear failures in wingwall joints. Hence, it was apparent that the wingwall members would have to be stiffened greatly—and this had to be done with the addition of a minimum of weight to the structure.

The solution proposed called for transient prestressing, whereby prestressing moments are applied simultaneously with live-load moments to nullify them. This technique permits a prestress considerably in excess of what could be used if the prestress were permanent.

• **Transient prestressing**—To convert Model X-2 to a transient prestressed roadway, only the wingwalls were changed and prestressing cables were added. For one thing, the step joints were reinforced at top and bottom with a pair of channel-shaped steel sheets, ¼-in. thick and 6 ft. long. Lugs on the top section were placed in slots in the bottom one to transmit shear. Also, ½-in.-thick bearing plates inside the channels were matched up with notches in the wingwalls to transfer the horizontal component of the prestressing force across the joints.

Hydraulic cylinders for applying the transient prestress were installed on both sides of the road at 80-ft intervals, where they were attached atop the steel channels. The cylinders had a 4-in. bore and 6-in. stroke.

Tendons consisted of ⅝-in.-dia strands, which were looped around a pair of cylinders to prestress an 80-ft length of road. To form the loops, threaded swaged fittings on the ends of the strands were joined with a turnbuckle.

The tendons were positioned vertically with hold-downs. These were attached to the road with plates that fitted under the wingwalls. The hold-downs on the outer sides consisted of threaded pipe sleeves through which short lengths of 1½-in.-dia standard steel pipe were slipped. With a tool designed for the purpose, this pipe was forced down, pushing the strand down and pretensioning it. Then the pipe was locked in place by screwing a plug into the pipe sleeve.

The strands on the outer sides of the wingwalls were given an eccentricity of 24.25 in. with respect to the neutral axis of the wingwall, and the inner strands, an eccentricity of 5.44 in. The torsional unbalance produced was resisted by the rigidity of the wingwall and the lateral bending stiffness of the road.

• **Vehicles activate prestress**—Two methods were proposed for pressurizing the hydraulic cylinders to apply the prestress in phase with the live load:

One was a mechanical treadway pump system. The underlying con-

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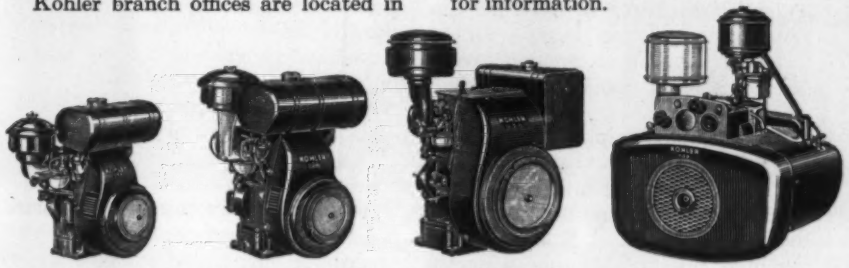

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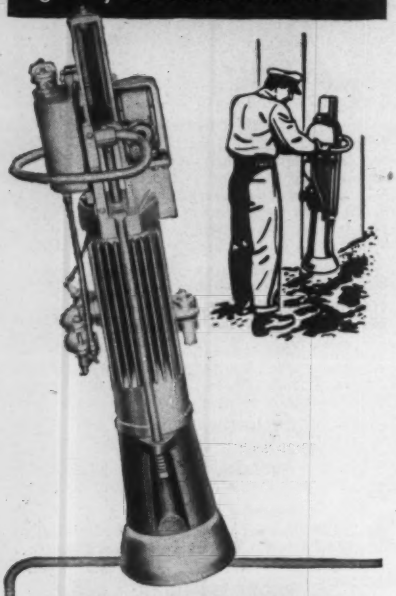

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cept was to make use of the weight of the heavy combat vehicles to apply the transient prestress. A treadway would transfer the load to a hydraulic cylinder, which would act as a pump. The output of the pump would pressurize the wingwall cylinders and prestress the roadway. Thus, the live load would virtually pick itself up by the bootstraps.

While this scheme offered simple hydraulic circuitry, it had the disadvantage of being heavy and of special design. So an alternative was developed with a solenoid valve and pump system:

A hydraulic pump (3,000 psi and 5 gpm) was positioned at one end of the road. To it was attached a pressure and return manifold, which ran the length of the road. Solenoid valves mounted midway between wingwall cylinders transferred oil from the manifold to the cylinders. These valves were activated by pressure switches mounted under a treadway formed with 3x12 planks. Both hydraulic and electric circuits were provided with quick connections for rapid makeup in the field.

Where the cables are looped over the top of the wingwalls, prestressing and live-load moments are additive. To overcome this condition, the strands in successive bays were lapped 20 ft, and a switch was installed at the junction of the bays to energize both simultaneously. When a vehicle approaches the overlap area, prestressing moments produce tension in the upper fiber at all sections of this area. However, at all points where one cable is above the wingwall neutral axis, the tension is reduced. This situation is not critical, since these areas are reinforced by the steel encasement at wingwall joints.

• **Three test series run**—The transient prestressed road also was tested on the mud flats of Laguna Mugu. Crossings were made with vehicles ranging in gross weight to a maximum of 60 tons for tracked vehicles and 91,260 lb for wheeled vehicles. Deflections were measured by focussing a level on rods permanently attached to the road at about 20-ft intervals.

Three test programs were carried out, leading to design modifications. In the first series, which was to establish the capacity of the road for tracked vehicles, the hydraulic cylinders were spaced 40 ft apart, with strands lapping 20 ft. With a General Sherman tank and crawler tractor in tandem (57 tons), the maximum deflection was 4.2 in.—56% less than the maximum measured on the X-2 roadway, though the load was 54% greater.

In view of this excellent performance, cylinder spacing was increased to 80 ft for the second test series, run to obtain the capacity of the road for wheeled vehicles. Under a load of 91,260 lb with a loaded truck-trailer, a maximum deflection of 2.4 in. was recorded.

The third series was aimed at evaluating the performance of the road under repeated crossings. In addition, a precise deflection profile was obtained for the purpose of checking theory, and again results agreed with a modified Hetenyi analysis for beams on an elastic foundation.

Twenty runs were made at various speeds with a General Sherman tank without any structural difficulties. The tests were discontinued because the 2-ft-high canvas curtains on the wingwalls were not sufficiently high to exclude mud that boiled out of a water channel at one end of the road.

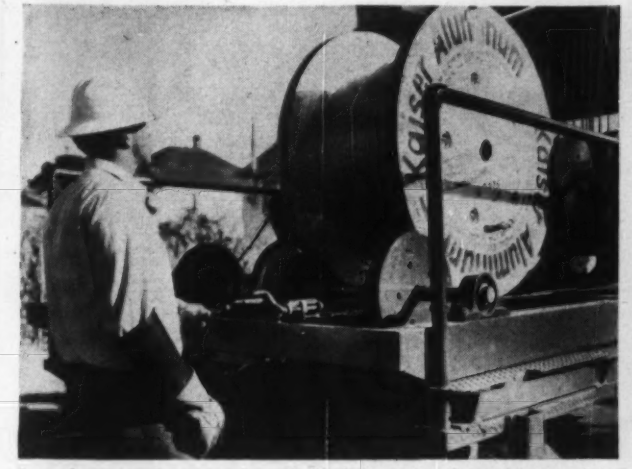
The tests indicated that transient prestressing increased the capacity of the X-2 roadway from 35 tons to about 60 tons, though dead weight was increased only 15%. If the prestressing forces had been applied without live load, theoretical flexural stresses of about 15,000 psi would have been produced. However, simultaneous application of prestressing moments with live load never allows these high stresses to develop. Hence, transient prestressing permits timber to be worked at nearly the stress level of structural steel.

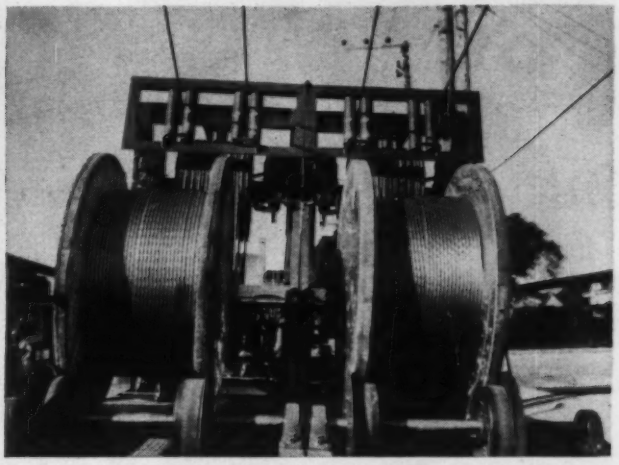
Perlite and Steel Roof Deck Get 1-hr Fire Rating

An unprotected 24-ga corrugated steel roof deck topped with an insulating slab of perlite concrete has now qualified for an official Underwriters' Laboratories one-hour fire rating, according to an announcement by the Perlite Institute.

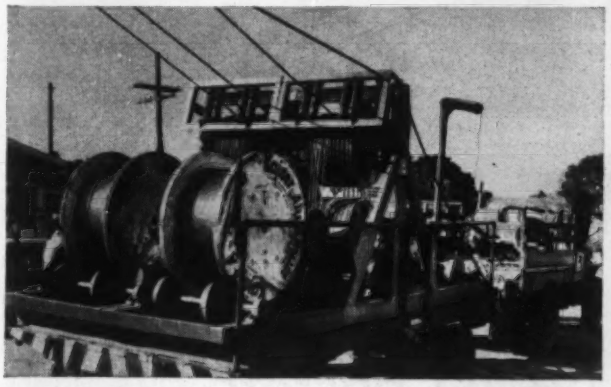
The roof deck was constructed of 24-ga corrugated steel and insulated with a 1:6 mix of perlite concrete. The overall thickness of the deck was 3½ in. from the bottom of the corrugations to the top of the slab, but the average thickness of the fill was only 2⅞ in. A 4x8-1214 wire mesh was placed in the perlite concrete to act as temperature and shrinkage reinforcing and to help carry the 40-lb. live load, since the load-carrying capacity of the metal deck decreases at temperatures over 1,000 F.

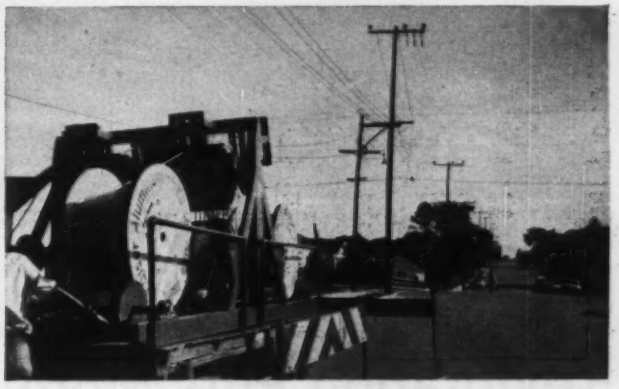
No fire resistive ceiling was required, although supporting beams were boxed with metal lath and ⅞ in. of perlite-gypsum plaster. At the end of one hour of fire exposure, the average beam temperature was 340 F. The calculated insulating U-factor of the assembly, including built-up roofing, is 0.17.





Attendant regulates tension (left) by means of cranks. At right: Reels at each end of machine ride on flanged rubber-tired wheels.





Four pairs of grooved bull wheels (left) hold tension. Right: Tension is so uniform that conductors are tied in without sagging.

Wires Strung Under Tension

Advantages of stringing several transmission or distribution conductors under tension at the same time are so great that there is now a definite trend in that direction.

The first equipment of this kind to be used by Pacific Gas and Electric Co. was employed recently in stringing a 266,800-cir-mil, all-aluminum 22-kv line at Pacific Grove, Calif. The device, made by the Petersen Engineering Co. of Santa Clara, Calif., is shown in the accompanying photographs.

This particular machine strings up to 4 conductors under tension up to 477 MCM, and is known as Series 5000. Series 6000 takes conductors up to 1 million CM, and Series 7000 to take conductors to 2" diameter is under development. As may be seen, there are four sets of grooved drums or "bull" wheels 26 inches in diameter, around each of which there are four wraps of the wire to prevent slippage. Grooves are neoprene lined to prevent damage to the conductor and further to insure against any possible slippage. Vertical rubber rollers guide the wire on and off the bull wheels.

On the shaft of each of the bull wheels there is a smooth acting brake of the type used for emergency braking on heavy earth-moving equipment. A small flexible steel cable leads from each pair of these brakes to a crank on the bed of the machine, giving perfect control over braking of the bull wheels.

An interesting feature of the design is the manner in which the reels of cable are supported. Two shafts with flanged rubber-tired wheels are ajustable so that the rim of any sized cable reel rides on these rubber tires. A brake on each shaft of the same type as that used on the bull wheels permits the degree of retardation necessary to keep the conductor under tension between the reel and the first bull wheel.

After a few pulls, an interesting thing develops.

The braking system permits such nicety of control over total tension in the conductors and relative tension between conductors that it is possible to dead-end and tie in directly without any sagging operation, thus effecting a considerable saving in time. Primary purpose of the tension stringing is, of course, to keep the conductors out of hot 4-kv primary and other circuits below. Even though there is little possibility of contact with hot lines with tension stringing, nevertheless the machine is grounded as a safety precaution.

Those familiar with line construction predict that tension stringing will soon become general practice, even on new work where no other lines are involved.

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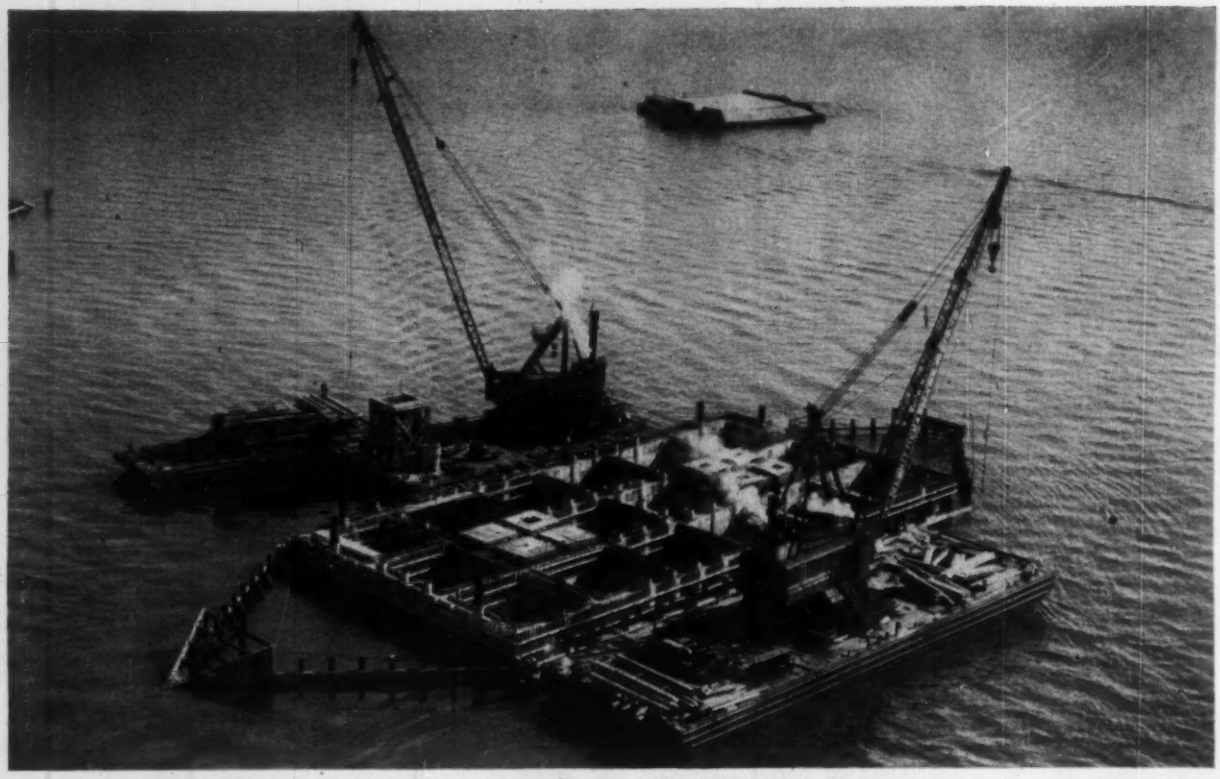


BUOYANT FOUNDATION for Tappan Zee Bridge contained trickiest revibration problem: keeping new wall concrete watertight as box descended under the added weight.

From ships to bridges . . .

Revibration Puts More Life in Concrete

Cornelius R. Barrett
Nyack, N. Y.

The strength of any concrete can be improved by revibration.

Many contractors and engineers stare incredulously when this statement is made. The very idea of disturbing early hardening processes, breaking initial bond or interfering with crystallization of cement is completely foreign to them. But twelve years experience have broken down any inhibitions of the writer about tampering with green concrete. The benefits are multiple: In addition to strengthening the concrete, revibration . . .

- Makes denser concrete
- Produces tenacious bond
- Removes air-and-water pockets
- Prevents honeycomb
- Releases water trapped beneath horizontal reinforcing bars.
- Reduces or eliminates surface irregularities.

Revibration is effective both in ordinary concretes and in concretes doctored with additives. Used in conjunction with a set-retardant, revibration has solved some perplexing concrete problems in the writer's experience. The retardant insures time for adequate vibration and revibration.

A problem in concrete ship construction brought about the first experience with revibration during World War II. The American Bureau of Shipping supervised design and construction of 125 concrete tankers and dry cargo ships at a time when steel plate was in short supply. Naturally high-quality, completely watertight marine concrete was a must. Hull shells were 6½ in. thick and contained three to five layers of closely centered steel reinforcing. Coverage over the steel was often only ¾ in. on the outside face, ½ in. inboard. Bulkheads were 8 to 10 in. thick.

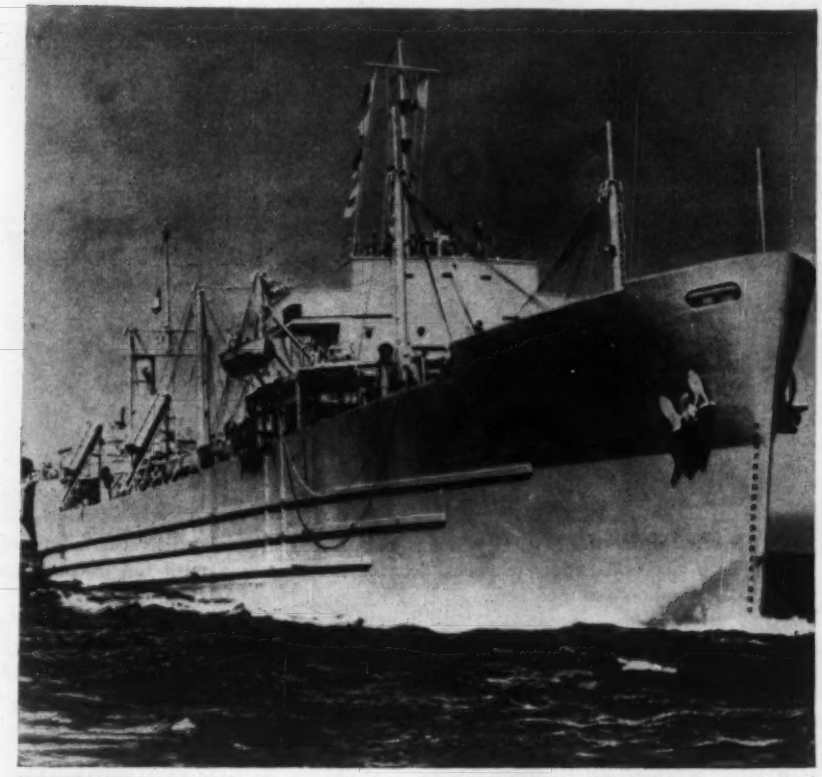
• **Leaked under rods**—Before certificates of seaworthiness could be issued, hydrostatic tests were conducted in all tanks and other compartments. Although walls proved watertight, leaks often showed up in adjoining sections and sometimes two and three bays away. Investigation showed that, during the casting, water had been trapped under longitudinal reinforcing. With subsequent hydration heat, this water evaporated, leaving flutes for easy passage of test water. Transmission of cargo oils through these channels could be a source of difficulty. Pressure grout impactors, working at pressures up to 150 psi, failed to correct the condition satisfactorily, and in many cases walls had to be torn out and reconcreted.

Then the idea of revibrating was suggested—and it worked! It forced out the trapped water and at the same time increased the bond of concrete to reinforcing steel.

• **Drydock next**—Encouraged by the experience on concrete ships, the American Bureau of Shipping undertook supervision of a huge, reinforced-concrete floating drydock in Montevideo, Uruguay. It was the largest reinforced concrete drydock that had ever been built in one continuous section, and watertightness again was a must.

The one significant discovery on this job was the effect of revibration on air-entrainment in the relatively thin sections of concrete throughout the structure. Tests indicated that to obtain the final desired 4½ to 5½% of air entrainment, it would be best to start with 5 to 5½% at the mixer, to take care of the loss occasioned by the prolonged vibration.

• **Pier 57**—About this time Madigan-Hyland, New York consulting firm,



WHERE IT STARTED—Concrete ships built in World War II leaked under horizontal reinforcing. Revibration plugged the leaks.

was cooperating with the city's Department of Marine and Aviation on a radical design for its Pier 57, which since has enjoyed much attention, (ENR Aug. 14, 1954, p. 30). The writer was resident engineer, under the direction of Emil H. Praeger, the pier's designer. A set of three boxes was to be constructed off the site, floated into place and sunk slowly on prepared foundations. They were so designed that up to 80% of the dead load ultimately would be supported by buoyancy of the boxes.

Watertight concrete was a prime requirement here, since the boxes would always be submerged. Required density was obtained; also air and water pockets, as well as aggregate clusters, were eliminated through controlled use of vibration routines. Capillaries are virtually nonexistent, so that there is no point of attack for salt or other deleterious chemicals. Moreover, the chances of crystal pressure, with resultant spalling, have been eliminated.

The most gratifying pour was in the shape of a U in the shell of the largest of the three pier boxes. In all, 500 cu yd was placed in the wall section, which was 2 ft thick and 12 ft high, with Vierendeel buttresses on 20-ft centers. It extended 82 ft along the end of the box, 60 ft along each side, and incorporated a heavy, transverse cross wall. A retardant was used to keep the entire mass fluid enough to allow revibration; not so much of it that the bottom layer was still soft when the top layer was finally placed, but enough so that each course of concrete could be revibrated with its preceding, underlying course, thus making the entire 500 cu yd homogeneous, without even a hairline crack in either outside or inside surface.

• **Tappan Zee Bridge**—Even as the boxes were being sunk in place at Pier 57, Madigan-Hyland was designing the huge Tappan Zee Bridge to cross the Hudson River and form the largest single structure on the 427-mile New York Thruway. The writer moved on to this job as resident engineer, again under the direction of Mr. Praeger. Of 23 large piers in Tappen Zee Bridge, eight are of the buoyant type, similar to those used on the Pier 57 job. Largest is 190 x 100 ft in plan, 40 ft high and weighs 20,000 tons. Construction of the boxes was handled by Corbetta Construction Co., New York, under subcontract with Merritt-Chapman & Scott Corp., New York. (These contractors also had done the Pier 57 work.)

• **A tricky job**—The most troublesome concrete placement (and the most unusual) took place on two anchor-span boxes. They had been floated downstream with 30 ft of their planned 40-ft height complete. The remaining 7½-ft wall lift and 2½-ft-thick deck-knee and top slab were to be placed at the bridge site. Each box was spotted in proper position over its prepared base (42 ft below mlw). Then 150-ft-long spud piles were driven, two in each corner, to hold them in place.

Each 30-ft-high box was drawing 26 ft of water and it was calculated that an extra foot of draft would be added with every 300 tons of concrete. We wanted the 7½-ft wall to be placed in a single, monolithic lift with complete watertightness and no cold joints. Yet we knew that by the time the lift could be topped off, the bottom 15 to 16 inches would be immersed in the river. Vertical mid-way stops were not usable to allow casting one end and later the other. This would introduce high and eccentric loading on relatively green concrete, as well as possible damage to shells of the spud piles. Sidewalls, endwalls, longitudinal and transverse bulkheads totaled 885 lineal ft, with thickness varying from 2 to 3 ft. Cold weather was an added factor, since the operation was to take place in November and December, respectively. And concreting was to be started on one day, finished the next.

Madigan-Hyland evolved the following plan:

Placement would be started at the centers of the walls and would progress simultaneously toward the corners to minimize eccentric loading. It would consist of three 2½-ft passes with middle and top course thoroughly revibrated and integrated into the first and second courses, respectively.

Using 1 lb of retardant per sack (in a 6-sack mix), MC&S workmen placed the first 2½-ft lift, 240 cu yd, in 6 hours, from 9 am to 3 pm. The second course, another 240 yd, was started immediately and ran to 9 pm, but with 2 lb of retardant admixture per sack this time. Following right behind the concrete bucket, vibrators were allowed to seek their own depth into the first pour which had been placed 6 to 7 hours previously, thus consolidating the two layers into one and eliminating a cold joint. The bottom was still above water level.

Crews left the job as usual, returning the following day at 8 am to find the top of the second layer still plastic and the bottom of the first layer setting up as planned. Thus we had 5 ft of wall in progressively increasing stages of set, from top to bottom. From 8 am to 3 pm on the second day the final 282 yd was placed, this time with a 1-lb mix again, bringing the wall up to full 7½-ft height. Once more the vibrator was allowed to seek its own level, penetrating to various depths of refusal in the previous day's concrete. By the time the wall was topped off, 762 yd of concrete had been placed and half of the first course

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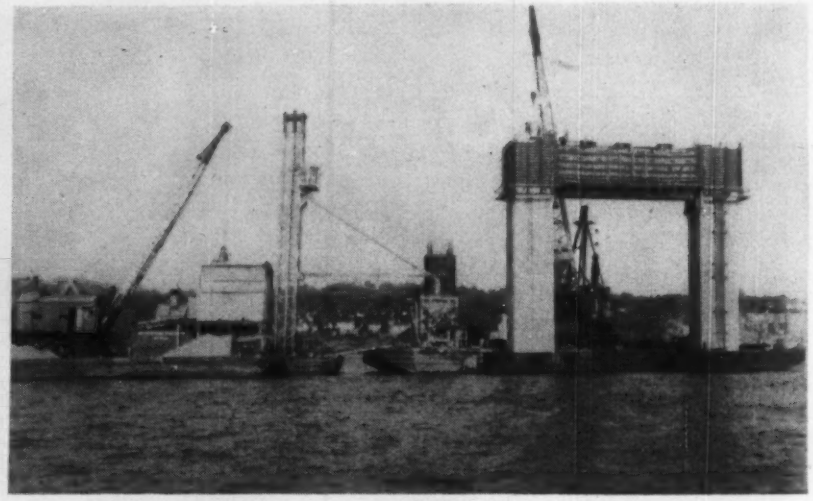

NO-CRACK SPANDRELS at Tappan Zee Bridge were achieved by decreasing set-retardant in successive concrete pours, delaying set at bottom until full load was on forms. Revibration also used here.

was underwater, fully set and watertight.

• **No-crack spandrels**—Another example of revibration benefits was found in our huge spandrel beam pours. These concrete beams span pairs of pier shafts and will support superstructure trusses. These beams were cast monolithically and were mechanically bonded to the pier-shaft walls. Each was 12 ft deep and contained 250 cu yd of concrete. Beam soffit forms were set with a 2-in. camber, since we knew that they would deflect one inch at the center of span when maximum loading occurred at the end of placement.

We felt that four 3-ft lifts would best make up the 12-ft depth, but without a retardant the bottom course would begin to set up before the beam was completed. Cold joints might also develop because of high summer heat. Then, with constant weight being added above it, the bottom, hardening course would deflect more, and cracking could be expected. With the proper proportions of retardant, however, and with forms designed for a liquid head of 18 ft as a safety factor, we kept the entire mass fluid throughout the 7-hour placement period; then revibrated the entire 12-ft depth, right down to the beam bottoms. Today the undersides of those 550-ton beams are as smooth and check-free as a sample beam poured and cured under laboratory conditions.

Another point of pride for all concerned is that in eight buoyant boxes, today there is not one single leak in over 19,000 lineal ft of cold joints. That's almost four miles of butted edges with no water penetration, despite heads up to 50 ft at extremely high tides.

• **When to revibrate**—So far, one question has been left unanswered: How much time is available for revibration? Experiments seem to indicate that revibration is effective as long as it is physically possible to insert the vibrator spud into the concrete. This is about twice the time of initial set. The experiments show, however, that concrete revibrated at about the time of initial set yields a significant gain in 28-day compressive strength, when compared with concrete either unrevibrated or revibrated substantially before or after the time of initial set. For Type I cement without admixture initial set time is about 2½ hours under normal temperature conditions. Abnormal temperatures and admixtures will alter initial set times predictably, making revibration a tool for coping with a wide variety of special concreting problems.

NATO Radar Station Slated For Norwegian Rock Chamber

A new $980,000 NATO project recently opened to U. S. bidders calls for construction of a radar station in rock chambers in northern Norway, beyond the Arctic Circle.

The project includes: a 4,592-ft-long shaft at an angle of 27 deg elevation, and with a section of 6 sq meters leading up to the top of a 3,280-ft mountain; blasting of 4,000 cu meters for the main operation halls, to be located in the rock about 98.4 ft under the top of the mountain; construction of small reinforced-concrete buildings on the mountain top; and construction of rooms in the main operation halls.

Tender documents were sent to qualified U. S. bidders on March 1, closing date for bids is April 15.

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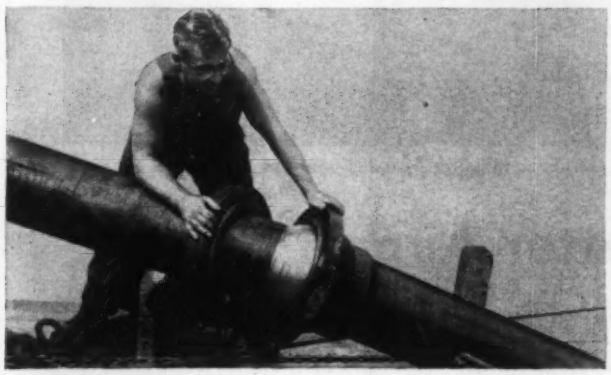

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Unique Needs Dictate Better Airport Design

There is no such thing as a prototype airport terminal facility. This fact became obvious during studies by Port of New York Authority engineers of facilities at the finest domestic and European airports prior to planning their own $60-million, 655-acre terminal at New York City's International (Idlewild) Airport (ENR Feb 24, p. 25).

Like all airport planners, they were faced with a great number of complex design variables, partly as a result of the dynamic state of the aviation industry itself, but primarily because each airport must be designed for unique sets of passenger and aircraft requirements.

• **Why different?**—The first feature of the New York airport that sets it apart is its size—sprawling over an area of more than 5,000 acres.

Secondly, surveys show that 85% of New York City's air passengers are origination-destination travelers, starting—or ending—their trips in the New York area. Only 15% of all passengers handled will be in-line (en-route) travelers, according to the authority, with only a third of these transferring from one flag airline to another.

This situation, by way of comparison, would call for an entirely different planning approach from that for Chicago, where the great majority of passenger movements fall into the in-line classification.

International is—and will continue to be—handling the bulk of trans-Atlantic air traffic, thus necessitating extensive accommodations for overseas airlines—their personnel and passengers.

• **Evolution**—In early PNYA thinking on terminal facilities for passengers, consolidated and centralized systems were planned. But the needs of an anticipated 4,000,000 passengers per year before the facility is completed, with an increase to more than double that number during the first five years of operation, quickly ruled out every one-structure terminal design as soon as it was proposed.

It was not until December 1954, that W. K. Harrison, of the New York architectural firm of Harrison & Abramovitz, who is also the authority's director of aviation, presented a unit system layout that has been enthusiastically received—and only slightly modified—by authority engineers in consultation with leading airport planners.

Under the unit system, ten buildings are planned, grouped in a central 655-acre area. One group will be the International Arrival and adjacent overseas Airline Wing Buildings that will cost an estimated total of $15 million. Seven individual domestic airline buildings are also planned at an estimated aggregate construction cost of $30 million. Roadways, taxiways, aprons, parking facilities, landscaping and utilities to serve the area will cost an additional $15 million.

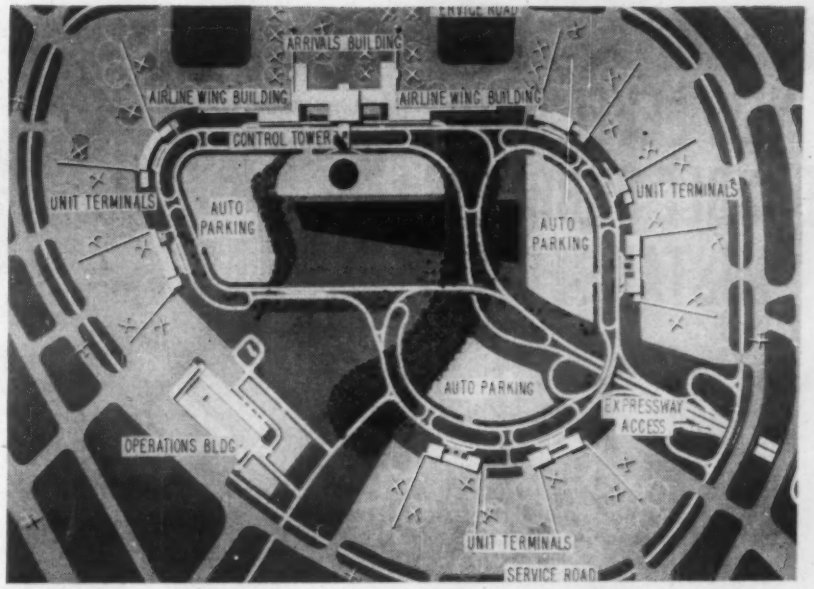
The terminal area will be located almost mid-field of the 5,000-acre airport, with access provided by an expressway entering through depressed underpasses beneath parallel, one-way taxiways that will encircle the terminal buildings. The plan calls for ten miles of 24-ft, two-lane roads within the area, connecting the expressway with all buildings and providing for separate movement of servicing vehicles to any terminal without interfering with other types of vehicular traffic in the area.

Three parking lots with a combined area of 50 acres will accommodate 6,000 automobiles.

All terminal buildings will face a landscaped 160-acre plaza, with each of the domestic structures occupying at least 10 acres.

• **The answer?**—The Civil Aeronautics Administration has this to say about the unit (decentralized) system—"It generally imposes excessive walking distances on interchange passengers at transfer points. It is apt to impose excessive rolling distances for apron service vehicles handling interchange baggage, mail, express and cargo. Fur-

THREE VEHICULAR loops will provide uncongested routes to all points.



ther, the system is not adaptable to an efficient consolidation of activities."

Logan Airport, at Boston, Mass., is an example of this system, and it does, in its unitized terminal structure—more than 3,000 feet long—display the weaknesses inherent to the system. However, International's interchange passengers represent only 5% of normal traffic, and the plans call for a continuous bus service, with vehicles on a short-interval schedule making a complete circuit of the area.

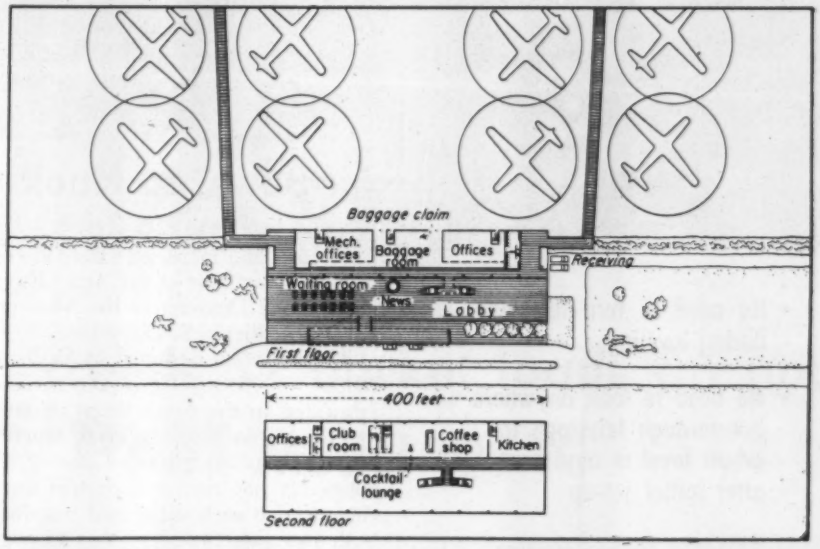
Consolidation of activities, selection and arrangements for passages will pose problems that the authority believes can be solved through proper administration.

One of the most important advantages claimed for the multi-structure layout is expansibility of airport facilities. The terminal area, planned for 25 years of service, lends itself readily to the requirement by housing individual airline facilities in separate structures, each designed with extensive built-in expansion features.

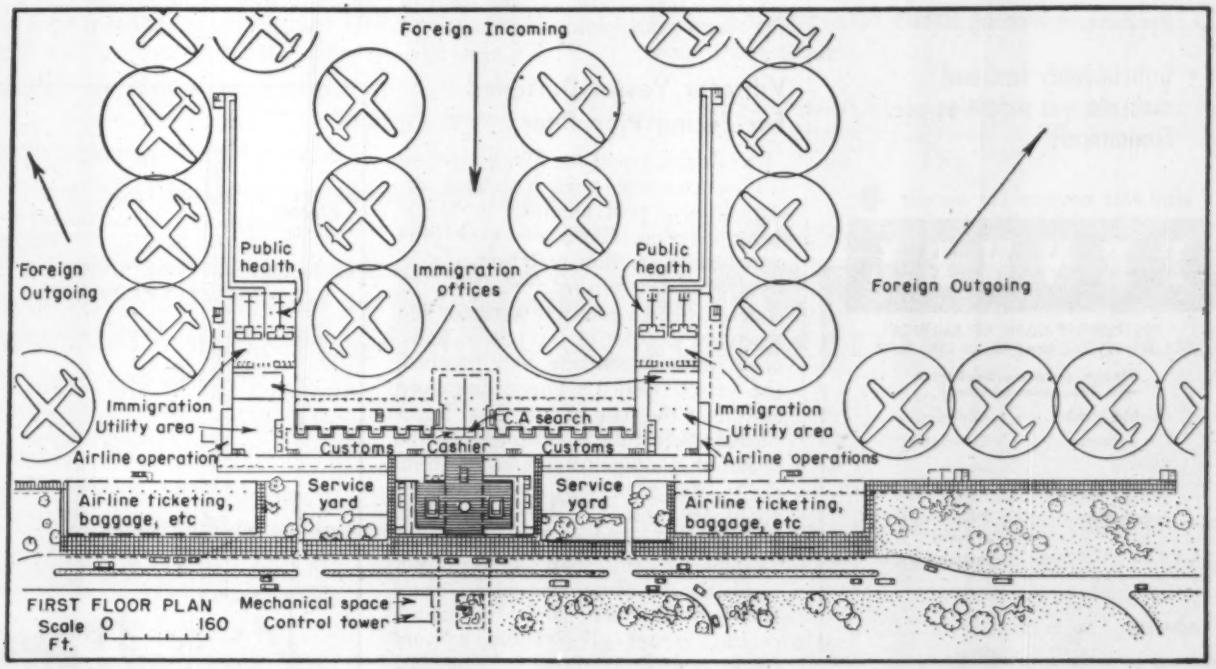
The existing 11-story control tower will be enclosed under new plans, and connected with the Arrival Building.

The temporary structure now used as the International Airport terminal will be demolished as one of the final steps in the development, to be replaced by one of the domestic terminal buildings.

DOMESTIC UNIT buildings (right) provide services to in-line travelers.

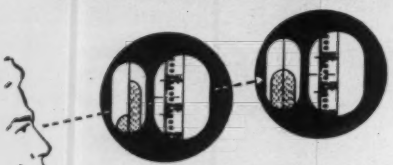


INTERNATIONAL ARRIVAL building (below) separates in- and out-bound traffic.

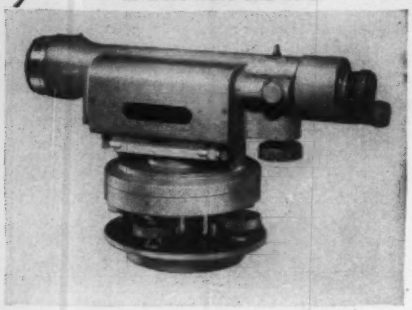


SURVEYING NEWS

NEW LEVEL WITH DOUBLE BUBBLE IS "MISTAKE-FREE"



Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.



- No need to turn telescope during leveling
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- American type — erecting eyepiece, 4 leveling screws
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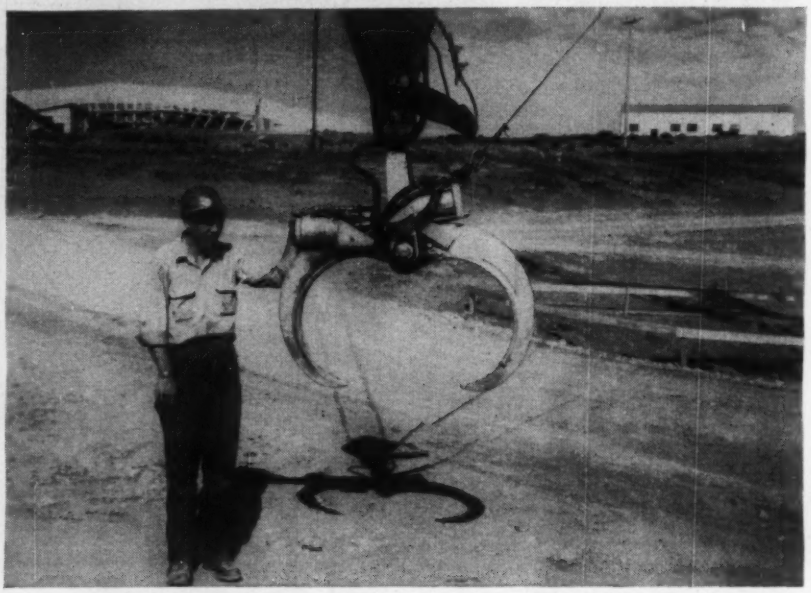
FIELD AND OFFICE



Air-powered Hook Cuts Labor Costs

An air-operated crane hook has cut labor costs and increased safety in the placing of concrete at the Army Engineers' Oahe Dam across the Missouri River near Pierre, S. D.

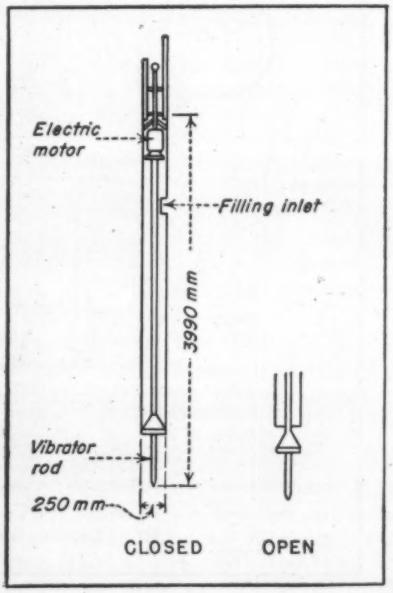
The hook was designed by William Mittry of Mittry Constructors, and fabricated in the firm's shops on site.

The 10-ton capacity hook roughly resembles an old-fashioned pair of ice tongs. It has two semi-circular arms that overlap each other and interlock with two air-actuated pistons to open and close them. The air hose leads to the crane cab, where the operator works the controls. As a safety measure against dropping a bucket, the hook can be disengaged only when it is not carrying a load.

The hook eliminates a man whose sole duty in the past was to stand atop a truck to engage and disengage the conventional hook by which the four-yard bucket was lifted. Two types of hazard are done away with. The hook removes the possibility of a man's hand being caught between the bail of the bucket and the hook, the possibility of a swinging bucket knocking the man off the truck also is removed.

Vibrator Vessel Designed For Filling Pipe Piles

A vibrator vessel for filling pipes in casting concrete piles has been designed by a port engineer in Stockholm, Sweden. Closed-end pipe piles were first driven, then prefabricaed reinforcement skeletons inserted. Next the concrete-filled vessel was lowered, and when the bottom of the pile or previously poured concrete was touched, the vessel opened. The cone-shaped closure at the base of the vessel forces the concrete to the periphery of the inside of the pipe. For piles of 18-in. dia a vessel of 25-gal capacity poured about 10 cu m per shift. On 30-in. piles a vessel of 70-gal capacity poured 25 cu m per shift. An electric motor inside the vessel supplied power. Short test sections of 2 to 10 m were homogenous masses of concrete without cracks or honeycombs.



"Production often exceeds 32 bucket loads an hour" with the P&H Model 105 TC

Here's another example of the earning power of the P&H Model 105 TC: *Concrete handling* — cited by P. A. Thrall & Sons, general contractors of Aurora, Ill. Production on various jobs ranges from 26 to over 32 loads per hour. They say, "The limiting factor is the trucks bringing in the ready-mix."

As a trench hoe, this same machine recently dug 420 feet of 30" trench 4 feet deep in less than 5½ hours.

About maintenance: "Instead of constantly paying out money for repairs, we have spent less than $100 in the first year for parts on the whole P&H unit."*

The Model 105 TC has a 10-ton lifting capacity. It's fully convertible, of course. Get complete details from your P&H dealer.

*User's statements are taken from a certified Gould Report. Copy will be sent upon request. Write for Gould Report No. 5503. Or ask your P&H dealer.

P&H POWER CRANE & SHOVEL DIVISION

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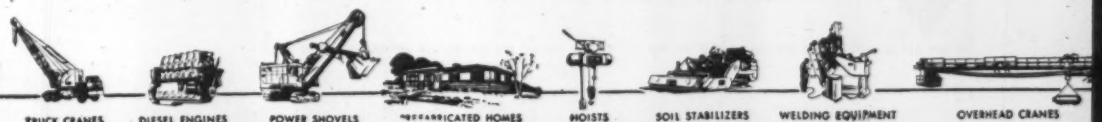
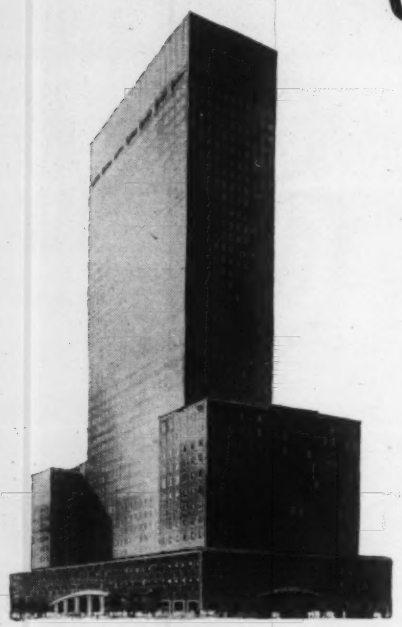
the P&H Line



Truscon Perfects THE STAINLESS STEEL



First installation of Truscon's stainless steel reversible window will be in the monumental 150 E. 42nd St. Building, known as the "Socony-Vacuum" Building. This world's largest fully air-conditioned commercial office building is 42 stories high. It will be equipped with more than 3100 of the new windows. Harrison and Abramovitz, architects; John B. Peterkin, associate. Turner Construction Company, general contractor. Edwards and Hjorth, structural engineers. Jaros Baum and Bolles, mechanical engineers. Edward A. Ashley, electrical engineer.

Rotates full 360° . . . Tested leakproof in 100 mph winds . . . Both sides offer equal weathering qualities . . . 80 times more resistant to air infiltration than existing industry test standards . . . Stainless steel's strength, durability, corrosion resistance . . . Vinyl plastic weatherstripped... Cleans from inside in half the time, at half the cost.

At last, all the architectural advantages of stainless steel are applied in a practical way in a pivoted reversible window.

Stainless steel offers almost complete immunity to weathering effects. It resists rust and corrosion. It is easy to clean and to keep clean. It offers tremendous strength in thin sections that trim bulk and save weight. And, you can't wear it out. It keeps its good looks for life.

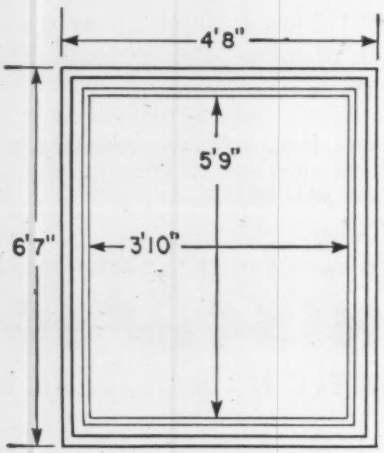
Here is truly the permanent window. The easiest-to-maintain window. The best-weathering window ever produced.

To prove wind and rain resistance, severe tests were run. For example, a stream of water was cascaded along the crack between stainless steel sash and frame for a full thirty minutes. *No leaks developed.* Truscon engineers found that this window resisted all but one-hundredth of a cubic foot of air per minute per foot of crack at a wind speed of 25 mph. That's *80 times less* air leakage than the existing industry standard allows.

Any tiny amount of rain that does work its way past the first vinyl plastic weatherstripping will collect in the groove at the bottom of the frame and be carried off.

Such weather tightness means important savings in fuel and air-conditioning costs. This window can be cleaned in half the time, from *inside,* at half the cost. More savings.

Truscon engineers will be happy to help you apply the window to monumental jobs now on your boards. The coupon below will bring you advance information.



Truscon's stainless steel reversible window as designed for 150 E. 42nd St. Building will be assembled in a panel unit with stainless spandrels. Truscon engineers will help you design size modifications of this window to meet your individual requirements.

All of the exterior surface of 150 E. 42nd St. Building above the 3rd floor will be stainless steel. Illustrated are vertical piers and spandrels. Only four inches of masonry behind the stainless steel sheathing will be needed to meet New York City building codes. This reduced wall thickness allows an extra 3% of rentable space. Wall weight will be cut by about 70%. Stainless—selected for resistance to corrosion and fire, low maintenance costs and appearance—is being supplied by Republic and other leading producers.

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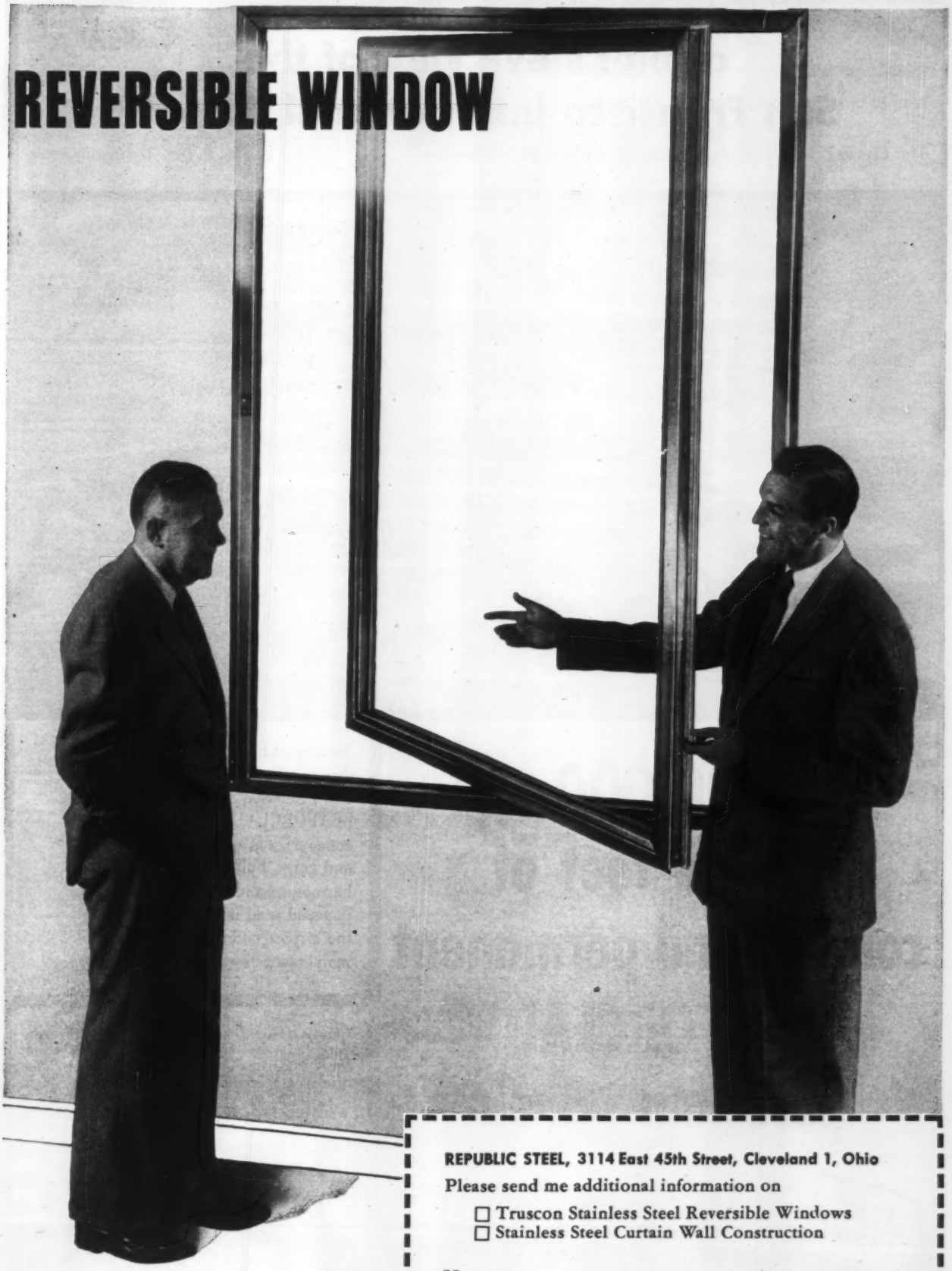

REPUBLIC STEEL, 3114 East 45th Street, Cleveland 1, Ohio

Please send me additional information on

- ☐ Truscon Stainless Steel Reversible Windows
- ☐ Stainless Steel Curtain Wall Construction

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K-7483

a pilot's eye view of the San Francisco International Airport

Basic Plan by Public Utilities Commission, City & County Of San Francisco — *Design by Wm. P. Day, Architect-Engineer*

100,000 square feet of colorful and permanent SEAPORCLAD porcelain panels

An airport has to stay modern looking through the years! That's why the San Francisco Airport selected SEAPORCLAD for its piers and concourses as well as for its air mail and cargo building. These panels harmonize and enhance every other material used in the design of the airport and the cost of maintenance is practically nil!

Construction: Seaporclad-Seaporcel Porcelain Face Skin, Galvanized Back Skin, Hot Plate Press Laminated to Aluminum Honeycomb Core.
Size: Panels—Principally 2'-9" wide x 5'-10" high x ¾" thick.
Waterproofing: Flashing Flanges and Mastic in ⅛" Joints.
Color: Buff, Semi-Matte, Terra Cotta Texture.

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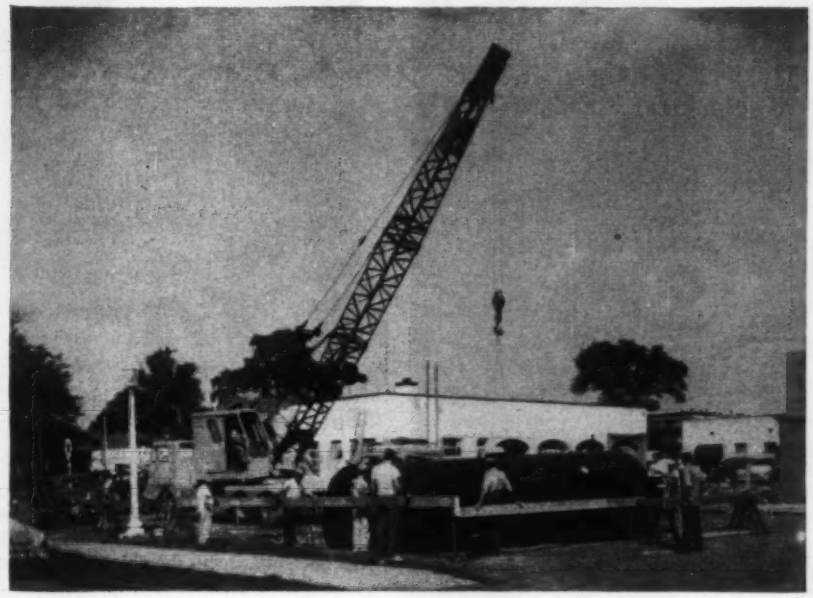


Crane Fits Small, Medium-Size Jobs

A new 15-ton capacity crane mobile, designated as Model 151-RA41, is designed to fill the gap between smaller and larger cranes and thus make it profitable to go out after many small and medium-size jobs otherwise neglected or turned down.

The carrier mounting is designed specially for crane service. Powered by a 404-cu-in. displacement Hercules gasoline engine, it has single wheels in front and dual tandem wheels in rear. Ample flotation is said to be assured with 10–10:00x20-12-ply mud and snow grip tires. Wheel base is 182 in. A main transmission with three-speed auxiliary provides 12 forward speeds to a maximum of 44 mph and three reverse speeds. Front and rear extensible outriggers are standard equipment.

The rig with standard equipment, including 30-ft boom, is priced at $24,000 and weighs 41,500 lb. Weight is distributed with 15,850 lb on rear axles and 8,800 lb on front axle, allowing travel on most highways without permit. When required, axle loads may be further reduced by removing counterweight slab, outrigger beams and/or boom.

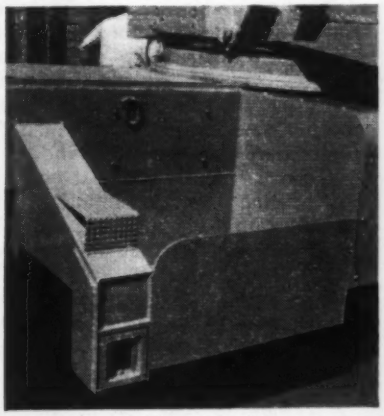
The boom is a pin-connected type of lattice construction supported by a cable-suspended floating briddle arranged so that the boom may be lengthened by the addition of center sections without changing the boom hoisting cable. Maximum recommended boom or boom and jib is 75 ft. Basic boom is two sections of 15 ft each with center sections in 5, 10 and 20 ft lengths; matching pendant cables are furnished with each boom section. Telescopic boom backstops provide additional safety when boom reaches maximum operating angle. The three ball-bearing mounted sheaves in the boom point and in the standard hook block permit reeving for 2, 4 or 6 parts of line.

A power load-lowering mechanism also is furnished as standard equipment for control in the lowering of heavy loads. When used with a six-part block it will allow a minimum controlled lowering of about 1 in. per sec—lowering speed is proportional to the engine speed.

The boom hoist is operated by separate clutches independently or simultaneously with any other crane motion.

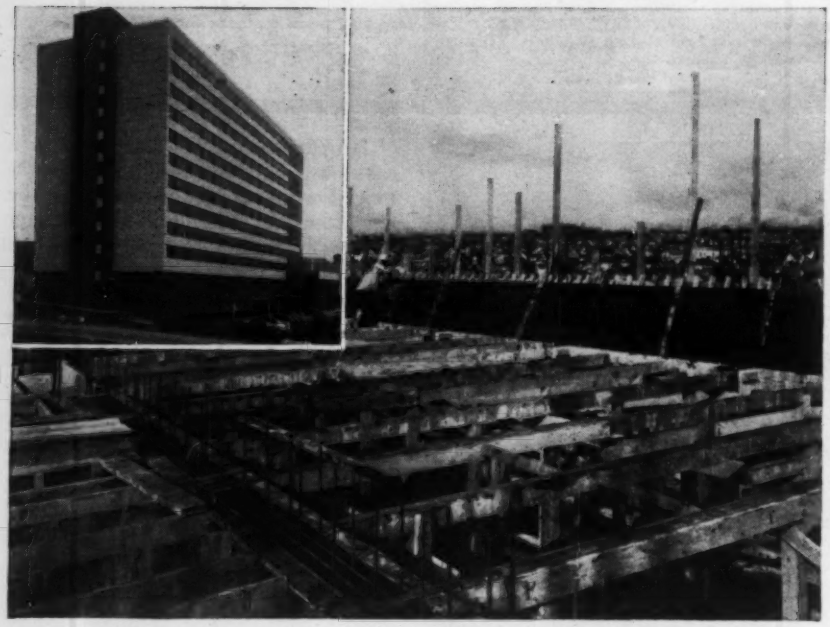
The crane machinery and engine are mounted on a full-length, one-piece, alloy-steel casting that is said to have exceptional resistance to shock and impact stresses and will maintain rigid alignment. Main drums, mounted in ball bearings, are in tandem and all high-speed gears are helical cut for quiet operation. Drum clutches are booster-operated, external-contracting band type with reportedly easy operation, simple adjustment and accurate load control. BAY CITY SHOVELS, INC., BAY CITY, MICH.

(*New Products continued on page 54*)



BOX-SECTION outriggers are extensible. Storage space for rigging is built in.

TELESCOPIC STOPS prevent boom from overreaching maximum safety angle.



Men's residence hall, University of Washington, Seattle. Architects—Young, Richardson, Carleton and Detlie. General Contractor—Strand & Sons.

MASONITE *Concrete Form* **PRESDWOOD**

Smooths the Way!

"The smoothest surface we have ever been able to produce," says Ray W. Strand, of Strand & Sons, Seattle, about architectural concrete formed with Masonite Concrete Form Presdwood.

Not only the walls, but the ceiling slabs, columns and beams were formed with this dense, grainless hardboard. In some cases, Mr. Strand reports, panels were used a dozen times. The 4′ x 8′ and 4′ x 12′ sizes were easy to work and handle, created fewer fins.

Cut Costs 3 Ways!

1. Screen side to concrete—for painted or unpainted surfaces. Tiny projections left in the concrete cut hand-rubbing costs up to 50%.
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3. Screen side to concrete—for painted surfaces. The textured surface left in the concrete forms an excellent bond for paint. Only minimum rubbing required.

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Town.....*Zone*.....

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"Masonite" signifies that Masonite Corporation is the source of the product

NEW PRODUCTS

Tubeless Tire Economies Extended to Earthmovers

An exclusive air-locking rim for use with all types of tubeless truck tires from the ¾-ton truck to the giant earthmovers has been developed by Goodyear Tire & Rubber Company.

The rim was developed because conventional large truck tires are now mounted on flat base rims having some form of removable side flange which cannot be made airtight. To make these truck tires tubeless, engineers either had to seal the rim or change it to the full-drop center type.

The extent to which the drop-center rim can be carried into larger sizes is determined partly by mounting difficulties and partly by over-all economics, which do not depend wholly upon the tire. Since the top of the range for best tubeless truck tire performance with a drop-center rim is apparently reached at the 10.00:20 size, a new type of rim construction had to be developed for heavier truck tires.

The end result is a new three-piece rim with a small rubber ring which locks in the air. The ring is compressed between the rim's base and side ring and can be installed within seconds. According to the manufacturer, it will last the life of the tire.

Goodyear points out that operators will be able to realize important time savings simply because of simplified repair procedures. Changing a conventional large tire, they say, is a 70-minute job on the average while plugging a puncture on a tubeless tire, which can be left on the rim while being repaired, is a 15-minute task.

According to the company, the cost of changing to "Tru-Seal" rims and tubeless tires will range generally from $17 to $24 per wheel. GOODYEAR TIRE & RUBBER CO., AKRON 16, OHIO.

(*New Products, continued on page 56*)

(*Advertisement*)

Shoring Methods . . . by Patent Scaffolding Co.

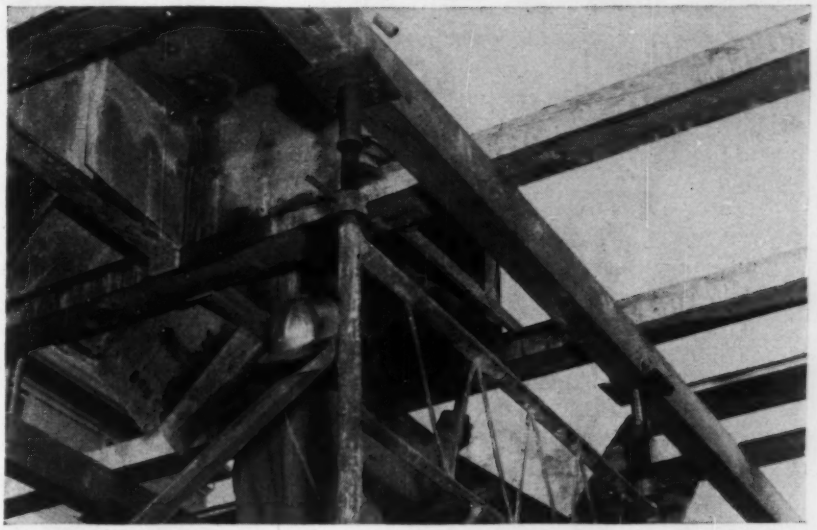
THREE ACCURATE WAYS to speed work with quickly assembled, prefabricated steel units to support forms for poured concrete are helping more and more contractors to gain substantial savings in building time and costs. Equipment for these three methods that will meet various requirements for any type of concrete construction is sold or rented by The Patent Scaffolding Co., Inc.

"Trouble Saver"® Sectional Shoring Adaptable to flat slab, flat slab with drop heads, pan joist and beam construction. Basic section is erected from 5 ft.-wide steel end frames varying in height from 3 ft. to 6 ft., 6 in. "Trouble Saver" Shoring gives safe working loads up to 509 lbs. per sq. ft. with a safety factor of 3. Safe working loads vary according to the spacing between frames and between rows of frames. 20" adjustable legs permit quick, accurate adjustment without the need of cutting, fitting and wedging.

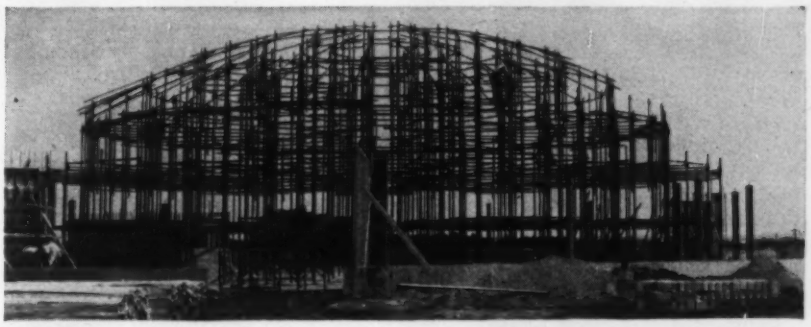
"TubeLox"® Shoring—This tube-and-coupler type shoring is ideal for meeting unusual job conditions such as extreme heights, uneven terrain and odd shapes or levels. Consists basically of 6, 8, 10 and 13 ft.-long interlocking steel tubes used with couplers and bases.

Burton Shores—A safe, sturdy single steel shore that is easily carried, erected and adjusted by one man. Rough adjustments are made by placing steel pin in adjusting holes; close adjustments with 8" long handle. Available in four sizes to provide working heights from 5 ft., 7 in. to 16 ft. Safe working capacities up to 14,500 lbs. with a safety factor of 3.

Free Bulletin—Detailed information on modern shoring for concrete construction can be found in Bulletin PSS-33, available at no obligation from Patent Scaffolding Co. Features on-the-job photos, safe-load charts and installation diagrams.



EXTRA HEADROOM for workmen nailing pan joist in place after joist bottoms are installed is provided by inverted 20" extension legs and base plates, found normally at foot of "Trouble Saver" Shoring. General Contractor Lindgren and Swinerton, Inc., uses this sectional steel shoring on Wilson Office Building, Los Angeles.



ROTUND CONTOUR of new National Guard Armory at Lawton, Okla., sloping from 37' high at the center to 16' at the edge, is easily handled with versatile "TubeLox" Shoring. Frederickson and Parks Construction Co. of Oklahoma City used 20,000 ft. of this tube-and-coupler type shoring which is ideal for such unusual job conditions.

SINGLE POST Burton Shores support forms for 4" to 7½"-thick floor slabs on two-story building at Beard School, Orange, N. J. Raised to 9 ft. here, this single post shore is available in sizes permitting working heights to 16 ft. The Fatzler Co., Inc., general contractor, is using 1,250 Shores on this job.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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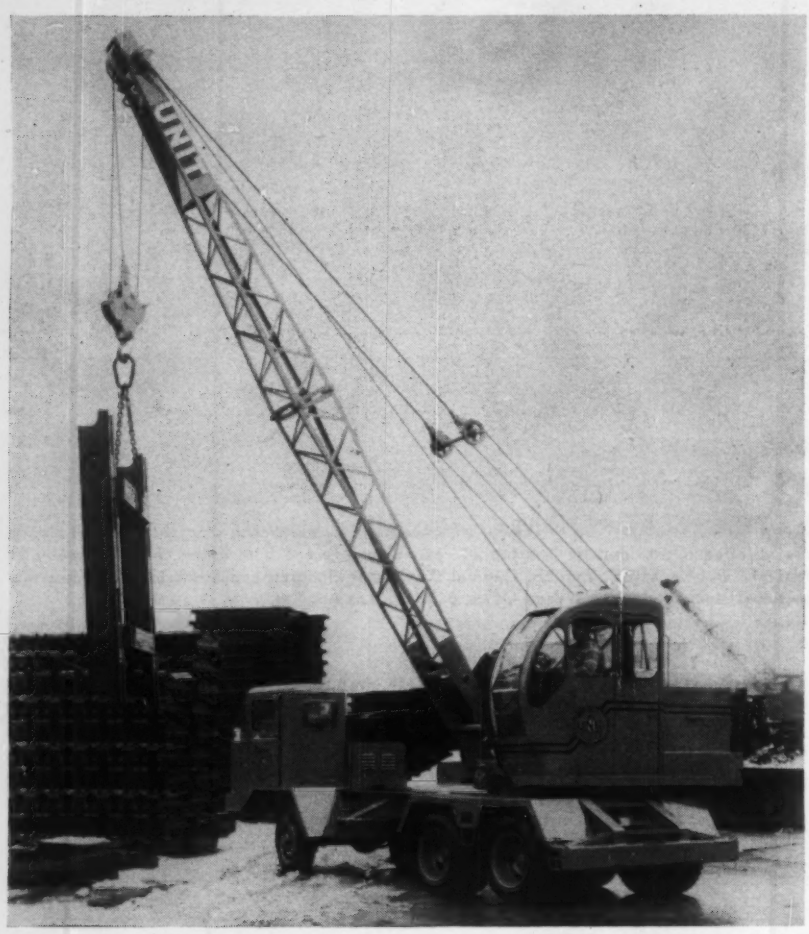


Unit Sports "Wrap-Around" Windshield

A "new look" keynotes design improvements on a spanking new ⅜-yd rig that doubles in brass as crane or backhoe

The Model 510 Unit Challenger is a ⅜-yd excavator with a dozen new features but the most obvious and striking is the modern cab design. The curving front window is designed to provide what the manufacturer calls "full range safety vision" for both excavating and steel work.

Clutches are of the two-shoe, two-cylinder, internal expanding type and are actuated by hydraulic cylinders that are said to be easily adjusted.

The machine's tapered drums are mounted side by side and are supported by trunnions to eliminate bending stresses on the shaft. The drums are driven by a pair of full-floating drive shafts.

An independent worm-type boom hoist permits power lowering as well as power raising at high speeds. The hoist is equipped with a safety brake that is automatically released when the clutches are engaged.

The new Unit introduces a new design of self-aligning hook shoes which are said to insure maximum rigidity and wearing surface. Equipped with replaceable wear plates, these hook shoes are at the front and rear of the turntable and are designed to relieve stresses from the center post, reduce wear on turntable bushing.

As a crane, the 510 is equipped with a 25-ft boom to provide an 8-ton lifting capacity at 10-ft radius (with outriggers). The backhoe attachment has a 15-ft boom and 4 ft 9 in. stick.

Power is supplied by a 4-cyl gasoline engine rated at 45 hp at 1,900 rpm. Total weight of the upper machinery with crane boom is 26,300 lb; with a backhoe attachment the weight goes up to 27,400 lb.

Standard ten-wheel carrier for the 510 has wheel base of 149 in. with outriggers optional. Unit Crane and Shovel Corp., Milwaukee 14, Wis.

New Typical Design of Timber Roof Truss Ready

The efficiency of the bowstring type of timber roof truss has been combined with the economy of segmental truss construction in a new typical design of a segmental bowstring trussed rafter, for short spans.

The new design has many applications, such as stores, recreational buildings, garages, and other structures requiring clear, post-free working areas under a bowstring roof. It is designed for spans of 34 ft through 50 ft, with a 4-ft spacing.

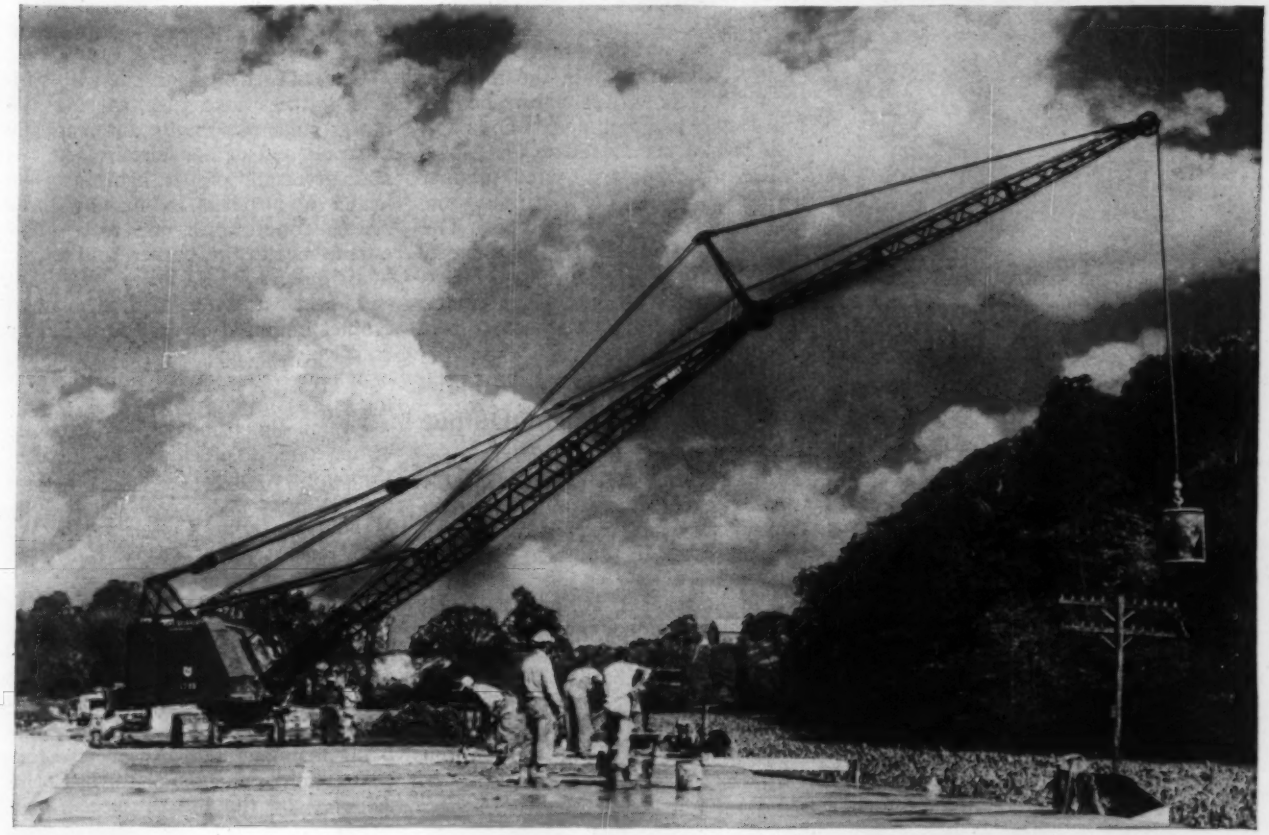
Only two basic members are required in the top chord, a feature that offers economy in fabrication and assembly. This bowstring trussed rafter can be made easily in the shop and, as the top chord is segmental, can be readily transported in knocked-down form to the job site.

The new typical design, No. 636—"Segmental Bowstring Rafter," is available without charge to architects and engineers as a guide in preparing plans for specific projects. Timber Engineering Co., 1319 18th St., N. W., Washington 6, D. C.

Corrugated Sheet Steel Available in 30-ft Rolls

Galvanized, cross-corrugated steel roofing is now available in rolls 30 in. wide by 31 ft long and also in half rolls 15 in. by 31 ft. A waterproof adhesive lap-sealer is applied to the rolls at the factory to provide a waterproof joint between courses. According to the company less roofing is required because many of the lap joints required with sheets are eliminated—8 to 16% less material is required to cover the same area.

Further, erection time is said to be



FAR REACHING, NEW LS-88 uses jib to spot concrete bucket on road job. Patented high gantry is raised and lowered under power, one of many optional extras.

Long, wide and exceptionally stable crawler mountings and shoe widths are available to suit any heavy-duty, ¾-yard job. All clutches are interchangeable.

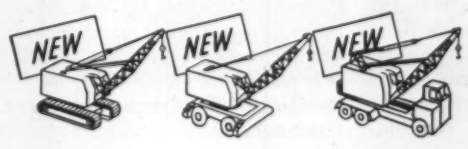
UP TO 25% MORE OUTPUT — Speed-o-Matic power hydraulic controls cut fatigue. No lag, jerk or strain.

AHEAD ON ½-YARD JOBS — It's the new LS-58, fastest, most powerful rig in its class, with "big-rig" features.

UP TO 99 NET HP FOR 1-YARD PROFITS — New heavy-duty LS-98. First time Speed-o-Matic in this class.

How to be AHEAD on every job

... use a Link-Belt Speeder! It's years ahead of the shovel-crane industry



TEAM up with the shovel-crane line that gives you the most productive capacity. It's the only line that offers you true power hydraulic Speed-o-Matic control, *and it's on every model.* Choose from many new models—with pace-setting improvements—in the ½ to 3-yard, 10 to 60-ton range. Equip for extra speed, power and work range—to bid successfully on more jobs—*and earn more on all of them.* See your Link-Belt Speeder distributor for complete facts, or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

LINK-BELT SPEEDER 13,772

Builders of a complete line of crawler and rubber-tired shovel cranes

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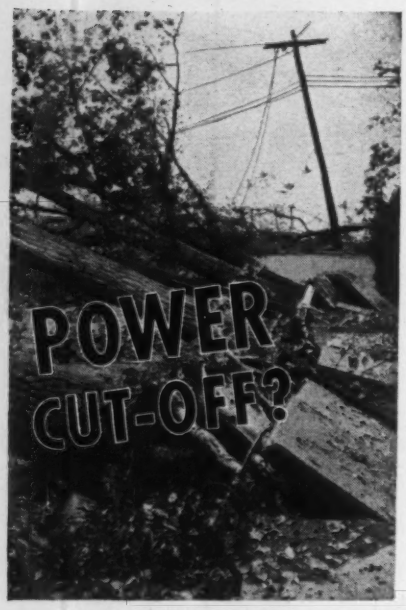

Violent windstorms and other severe weather conditions are often the cause of sudden power failures. Many hours are sometimes required to repair the damage to power lines.

No important institution or place of business can afford to be without electrical current for any period of time—it can be disastrous.

There is one sure way to be fully prepared against such an emergency, and that is to install Ready-Power stand-by equipment.

By so doing you are always assured of continued electrical power no matter what may happen.

Ready-Power stand-by units operate on gasoline, natural gas, butane, propane or diesel fuel.

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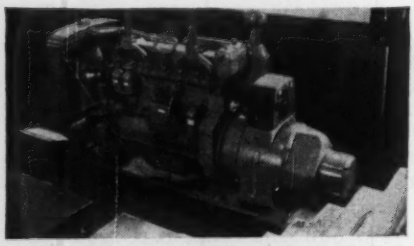

For complete information please write to

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Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks.

greatly reduced because the rolls are easier to handle. They can be unrolled like composition roofing, and each roll covers 75 square feet.

The new cross-corrugated product requires no solid deck sheathing—just roof boards on 29-in. centers. The design provides the necessary rigidity to bridge from board to board. DEPT. PR, CECO STEEL PRODUCTS CORP., 5601 W. 26TH ST., CHICAGO 50, ILL.

Space Heater Has Variable Air Volume and Heat Output

The semi-portable Waikiki Space Heater Number 4820, which can be used to heat buildings under construction or to cure concrete, heats and circulates 900 to 2,500 cu ft of air per minute.

The heater has a home type oil burner or may be equipped with a natural gas or bottled gas burner. The fuel nozzles can be changed to give 80,000 to 200,000 btu input, and a squirrel cage type blower circulates air around the three combustion chambers to provide ample heat transfer.

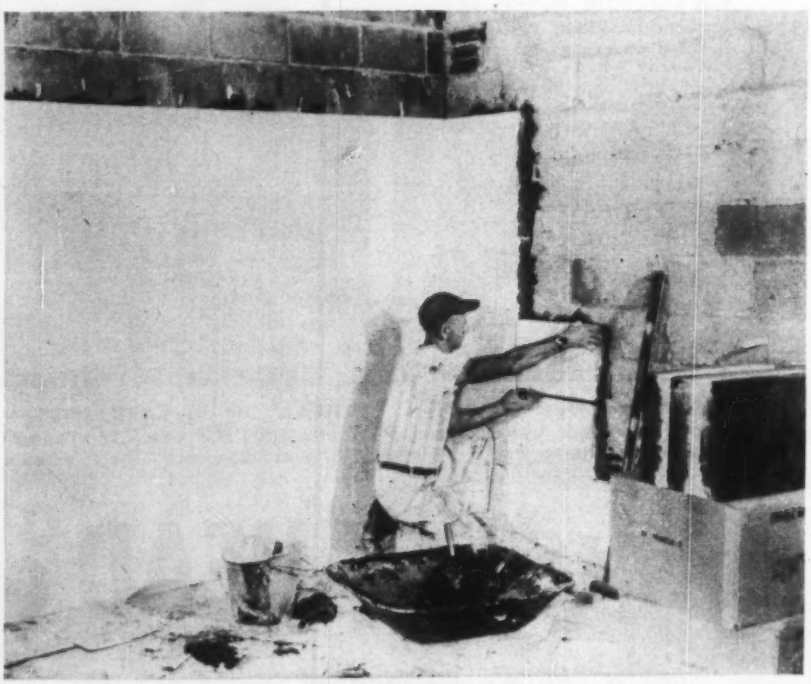
Once started, thermostats with variable settings take over causing the heater and blower to automatically cycle on and off, an electric spark is said to insure proper lighting. The heater is installed by making three service connections; one to a 110-v outlet, fuel to the burner, and an exhaust outlet.

The heater is enclosed in a metal cabinet mounted on legs so it can be easily picked up and moved about, or it may be suspended from the ceiling.

Overall dimensions of the heater are 48 in. long, 24 in. high, 36 in. high, shipping weight is 400 lbs. The present list price is $399.00 fob factory. VAPOR HEATING CORP., 6420 W. HOWARD ST., CHICAGO 31, ILL.

Super-Strength Wire Rope Boasts Long Service Life

A new high strength wire rope is reported to be at least 15% stronger than the best grade of wire rope now being manufactured. An average tensile strength of 300,000 psi has been achieved by the use of special high



Cellular Glass Block Has Ceramic Face

A unique cellular glass insulating material combines both insulation and a ¾-in. thick ceramic face in a single unit. Called Duraface Foamglass, the new material is said to provide a durable, impact-resisting surface along with high insulating and moisture-proof qualities. Standard size of the blocks is 18x12 in. with 3- and 4-in. thicknesses available. Double courses, using regular Foamglas for the inner course and the new material for the exposed one, can be specified. Straight or staggered joints may be used. Either hot asphalt or a cold mastic-type adhesive may be used for installation. Pittsburgh Corning Corp., Pittsburgh, Pa.

these men must know...

When leading contractors and construction engineers consistently specify Universal Vitrified-U. S. Concrete, you know that, through the years, they've found these products superior.

For example, in the job illustrated, the 30" Extra Strength Vitrified Pipe and Tylox Neoprene Gaskets were specified because, in the judgement of these top construction men, they assured the surest, most lasting service.

The Tylox Rubber Gaskets allow enough give so that earth movements in any direction, will be absorbed and the installation remain a perfect whole. Tylox joints are impervious to acids, alkalies, sewer gasses and waste. They are rootproof and leakproof for the life of the line.

Since Tylox is factory assembled — the on-the-job installation is simple, quick and economical.

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Baltimore Refinery
Baltimore, Maryland

Contractor — Lee Butler Company
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30" Extra Strength Vitrified Pipe with Tylox Neoprene Gaskets.

Engineer in Charge of Design and Construction —
James B. Vason, Bayway Refinery, Standard Oil Co.
Linden, New Jersey

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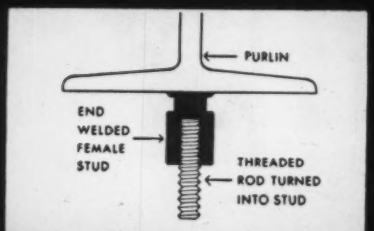
"STUD" NELSON HANGS A

FIXTURE

IN A FLASH!

Watch a contractor go to town with the NELWELD® system, hanging electrical fixtures, securing conduit and cable runs, clamping pipes, and fastening sprinkler heads. You'll see split-second end-welding of female studs, standard threaded studs, shoulder types and eye bolts with the bantam-weight NELWELD gun.

In a flash the stud becomes an integral part of the structure and in minutes the installation is complete.



Call in your NELSON Fastening Engineer for consultation. His specialty is cost reduction; his stock in trade, stud welding. Write for details—Bulletin 450.1.

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NELSON STUD WELDING DIV. OF GREGORY INDUSTRIES, INC. **LORAIN, OHIO**

carbon steel wire and improved processing, and it is expected that the new grade of rope will simplify the use of wire rope generally and thus will permit lighter weight equipment to be designed.

The preformed rope, to be known as VHS—designating very high strength—is already being used by the Navy for steam jet catapult launching assemblies and for arresting gears and barriers. It has been tested in heavy-duty construction, mining, petroleum, and logging installations where its service life is said to have been more than double that of existing cables. Present diameters of the new product range from ½ to 2 in. AMERICAN CHAIN & CABLE CO. INC., 929 CONNECTICUT AVENUE, BRIDGEPORT 2, CONN.

Dynamite Cartridges Come In Long, Thin "King" Size

New King-Size dynamite cartridges are now commercially available in four lengths and small diameters.

All of the manufacturer's cartridges are now available in 24, 20, 16 and 12-in. lengths. The diameters are 1¼, 1½, 1¾ and 2 in. The conventional 8-in. cartridge will continue to be available.

These cartridges are said to make possible more uniform fragmentation in the deeper blast holes which are being used in mining, quarrying, and construction and effect substantial savings in time and labor in loading blast holes. HERCULES POWDER CO., INC., WILMINGTON, DEL.

Steel Grating Designed For Hazardous Walking Areas

A new type of electroforged steel grating has been designed for areas where walking conditions are hazardous. To achieve an extra margin of safety the bearing bars have mill rolled serrated edges which are said to provide an excellent traction surface with comfortable walking conditions; the cross bars are of twisted steel. The grating is available in 1, 1¼, 1½, and 2 in. by ⅜-in. sizes. GRATING DEPT., BLAW-KNOX CO., FARMERS BANK BLDG., PITTSBURGH, PA.

New Track Roller Frame Improves Traction On D8's

A new seven-roller, oscillating-type track roller frame is now available as an attachment for the Caterpillar D8 Tractor.

Installation of this track roller frame on the D8 reportedly will provide in-

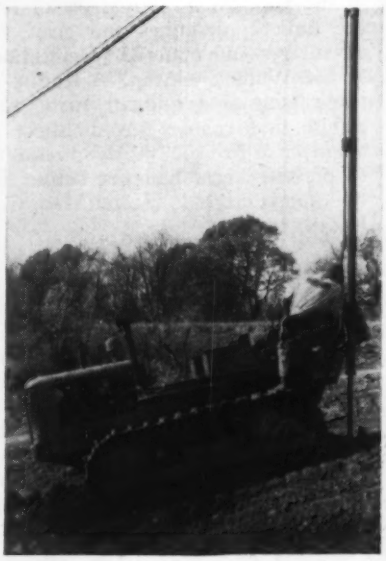
creased traction, greater flotation and better stability, particularly when the unit is operating in hilly terrain and locations where underfoot conditions are soft or unstable.

A tractor equipped with the seven-roller frame requires a 42-section track in place of the 39-section track included on the standard six-roller machine. New arrangements for bulldozers, both cable and hydraulic, and for the Cat No. 46 Hydraulic Control are also required for use with tractors equipped with the longer frame. Heavy-duty track roller guards are available as attachments for use with the seven-roller track frame. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Earth Drill for HD-5's Bores 24 in. Dia. Holes

The Model YT earth drill has been added to the line of matched attachments for the 50-hp. HD-5 crawler tractor. The YT is driven through power take-off and adjustment for drilling position is hydraulically controlled. The drill is mounted without disturbing front-mounted attachments such as a shovel or dozer. This permits the tractor to be used for a number of different jobs around a site and thereby reduces machinery complement costs. The manufacturer also points out that mounting the drill on the crawler gives it considerable mobility.

With the series of flights available, the drill can bore holes up to 24 in. in dia. Optional equipment includes a pole setter capable of handling poles up to 45 ft in length. Jobs performed by the drill attachment include fence post, telephone and telegraph pole drilling, exploration for foundations, soil sampling, etc. ALLIS-CHALMERS MFG. CO., TRACTOR DIV., MILWAUKEE 1, WIS.

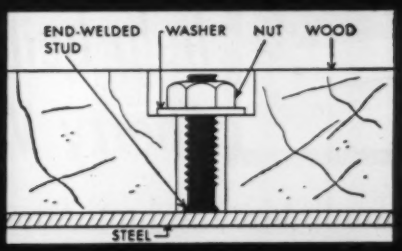


"STUD" NELSON SECURES

WOOD NAILERS IN A FLASH!

Looking for a faster, less costly way to fasten wood nailers to steel?

You'll find the answer in NELWELD[R]—the trigger-quick method of end welding fastener studs to steel. It makes the securing of wood nailers as simple as A-B-C . . . (A) Weld Nelson thread studs to steel member, (B) Lay nailer over studs and strike with hammer, giving stud locations, (C) Drill wood and assemble. An alternative method is to pre-drill wood and weld studs through holes in nailers.



NELWELD does the job at a fraction of the cost involved in punching or drilling and through-bolting.

Next time you think of wood to steel, think of NELWELD. Then call a Nelson Stud Welding expert to co-engineer the fastening into your design. You'll find him as serious as you are about reducing costs. Mail the coupon for complete information.

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Please send more information on stud welding nailers, and other cost-saving construction applications.

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NELSON STUD WELDING DIV. OF GREGORY INDUSTRIES, INC. LORAIN, OHIO

intelli-Giants help build Cherry Valley Dam

Building a 7 million yd. earth and rockfill dam in two short construction seasons demands lots of good equipment working on a well organized basis.

3 Chiksan Intelli-Giants were selected by the contractor for this 14 million dollar project for the jet-compaction of rockfill.

Chiksan Intelli-Giants, with operators in sitting position, are hydraulically controlled 320° horizontally, 120° vertically—with no effort. The manual controls are operated by water pressure, with pressures ranging from 30 to 300 psi.

In the Cherry Valley Dam installation hydraulic pressure for the controls is tapped off the 8 in. water delivery line to monitor.

Water in this line is at 100 psi pressure, and the monitor nozzle puts out water at 1800 gallons per minute.

For every volume of rock placed on the dam three times the volume of water is used in compaction—jetting it into place and washing out fines.

Exacting tests in the removal of perma-frost in Alaska, sluicing in the phosphate fields of Florida, dam construction in Oregon and California have proved the high efficiency and extreme economy of the New CHIKSAN INTELLI-GIANT.

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Chiksan of Canada, Ltd., Edmonton, Alta.

PUBLICATIONS

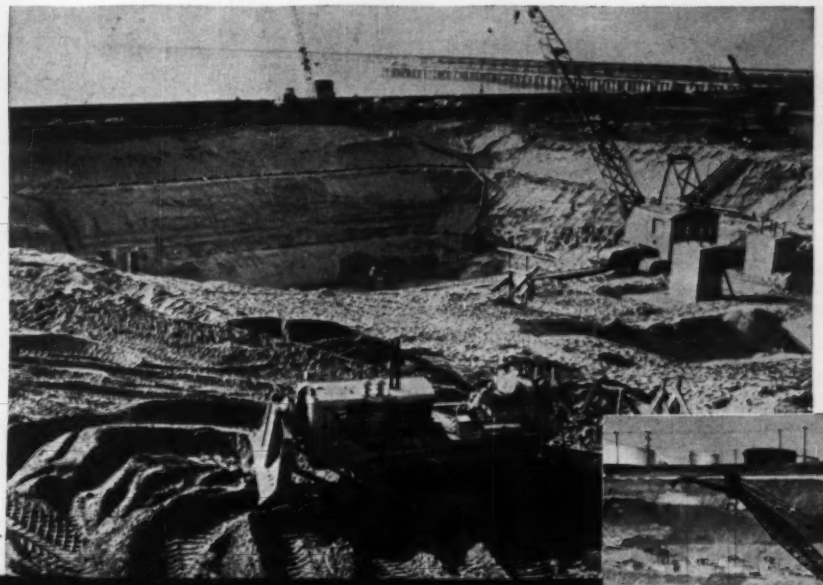
Cooling system—A new service bulletin "Give the Cooling System a Chance" has recently been issued. The bulletin contains many practical suggestions on the best way to care for an engine's cooling system and is highlighted by the use of many cartoons. The information is not only for the manufacutrer's diesels but is equally applicable to all internal combustion engines. CUMMINS ENGINE CO., INC., COLUMBUS, IND.

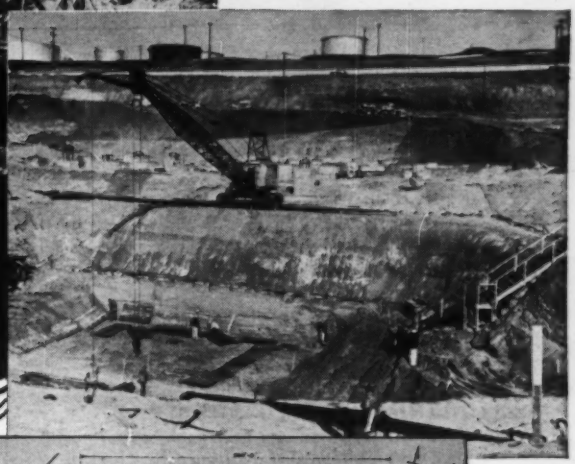
Core drills—Bulletin No. 21 describes and illustrates the line of LD and LLD portable powered core drills. The Model LD consists of a standard power plant, a built-in cathead hoist, a built-in positive displacement pump, a three-speed transmission and rotary drill head with hand lever feed. Model LLD is a lightweight unit without a pump, hoist or three-speed transmission but with same rotary drill head. Specifications for both models are included. ACKER DRILL CO., 725 W. LACKAWANNA AVE., SCRANTON, PA.

Municipal equipment—A new 16-page booklet "Allis-Chalmers Offers New Economy for . . . Villages, Townships, Counties, Cities, States, Federal" is now available. Action photographs take the reader to a wide range of community projects to illustrate the use of tractors, motor graders, motor and pull-type scrapers, motor wagons and power units with their matched allied attachments. ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

Water hammer—A fully illustrated 26-page booklet defines water hammer, gives its causes, problems and methods of solution. As a method of solution the bulletin describes and gives the advantages and material specifications of the Wade Shokstop. A feature of the catalog is a fold-out sizing procedure that enables any architect or engineer to size the Shokstop required to prevent water hammer before the building is erected. WADE MFG. CO., ELGIN, ILL.

Core drilling machine—An 8-page 2-color bulletin recently issued contains information regarding a high speed heavy duty diamond core drilling machine. A detailed illustrated description with complete specifications and working date is included. Further the new bulletin lists many items of accessory equipment required for successful diamond core drilling. Bulletin No. 160. SPRAGUE & HENWOOD, INC., SCRANTON 2, PA.

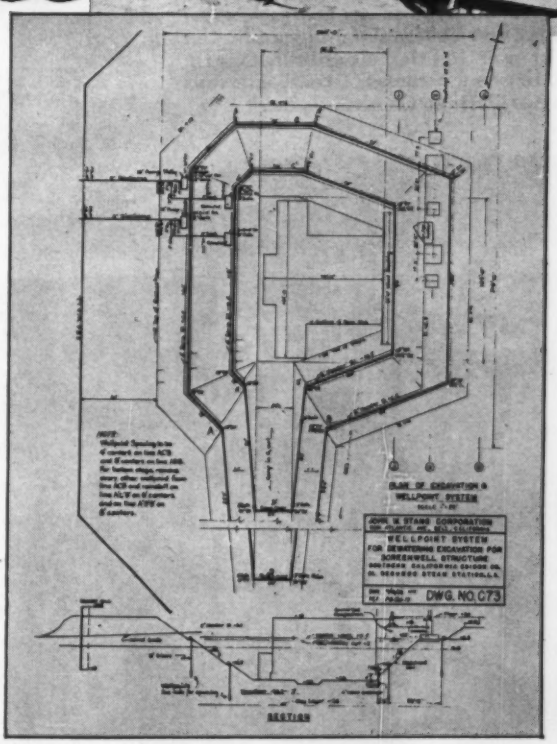




DRY WORK...
water under control!

STANG wellpoint job in beach sand...Down to 60 feet—30 feet below water level...*only 500 feet from ocean!*

Plans for an oceanside steamplant power station called for the construction of a reinforced concrete screenwell structure. Water and soil conditions were extremely adverse. The John W. Stang Corporation Engineering Service was called in. The resultant STANG plan (illustrated) *provided* completely dry excavation from the surface to a 60 foot depth ... *utilized* dry-land excavation equipment 30 feet below water level ... *made possible* the use of low-cost concrete forms. For fastest low-cost, construction when water is a problem ... call STANG!



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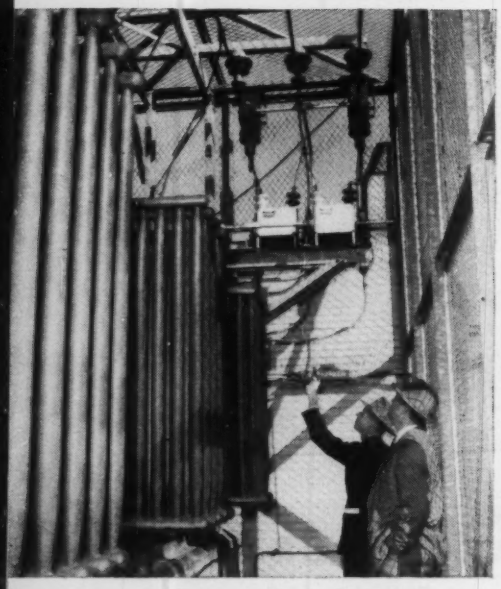
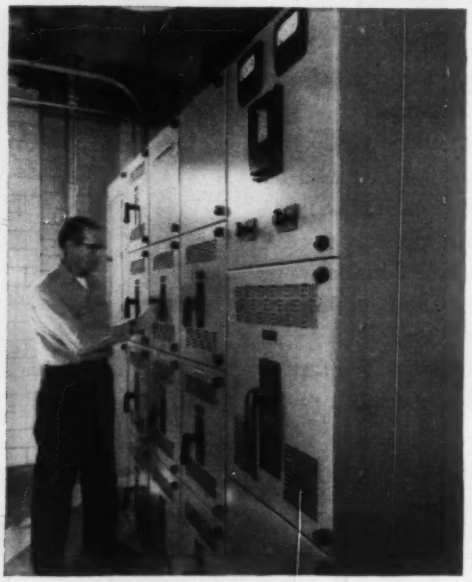
—first step in Cincinnati, Ohio's program to provide modern sewage treatment and disposal facilities. Consulting Engrs.: Havens and Emerson. Gen. Contractor: James McHugh Constr. Co., Inc.



FACT: Reliable electrical service starts at this city-owned substation, adjacent to the plant. Three 333-kva, single-phase Westinghouse transformers step down utility power from 13.2 kv to 480 volts.



FACT: Service continuity on the entire electrical system stems from this Westinghouse switchboard, distributing at 480 volts. Air circuit breakers protect the main circuit and 10 branch feeders.

FACT: Westinghouse "De-ion®" circuit breaker panelboards at key distribution points protect plant's services. Westinghouse dry-type transformer, top, reduces voltage for lighting and instruments.

FACT:

Westinghouse distribution equipment serves Cincinnati's new sewage treatment plant

ELECTRICAL SYSTEM DESIGNED TO MATCH LITTLE MIAMI PLANT'S ULTIMATE CAPACITY OF 30,000,000 GALLONS A DAY

FACT: Dependable power in Cincinnati's Little Miami Sewage Treatment Plant is assured by a coordinated installation of three 333-kva transformers, a 480-volt switchboard, lighting and power panelboards, dry-type transformers and motor control . . . all matched for operating simplicity and plant efficiency.

FACT: Positive protection of valuable equipment is provided by using Westinghouse circuit breakers throughout the distribution system . . . and circuit breakers are safe.

For the full case history and the Westinghouse team that helped coordinate it electrically . . .

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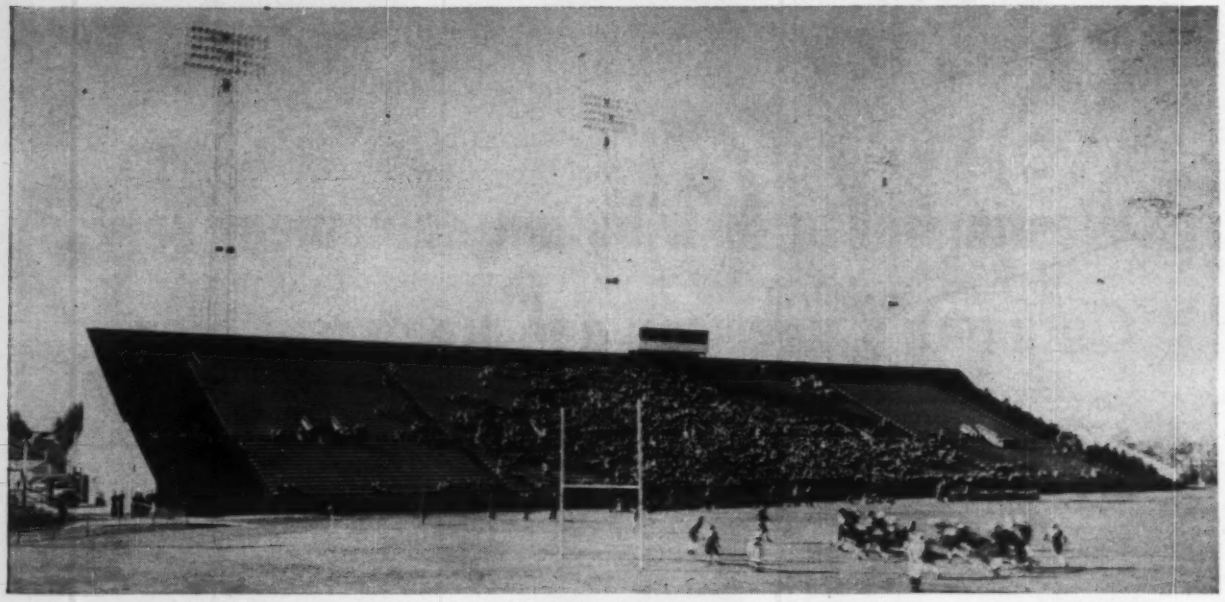
Call *The Man With The Facts* . . . the construction sales engineer in your nearest Westinghouse office

YOU CAN BE SURE... IF IT'S Westinghouse



FINISHED GRANDSTAND seats nearly 9,400, while its inside facilities can serve 15,000—all at a cost of only $270,000.

Grandstand proves a point for precasting

Continuity and pinpoint positioning applied to precast members are significant factors reducing costs

E. M. Rensaa,
Edmonton, Alberta

Under what design conditions should precasting be used?

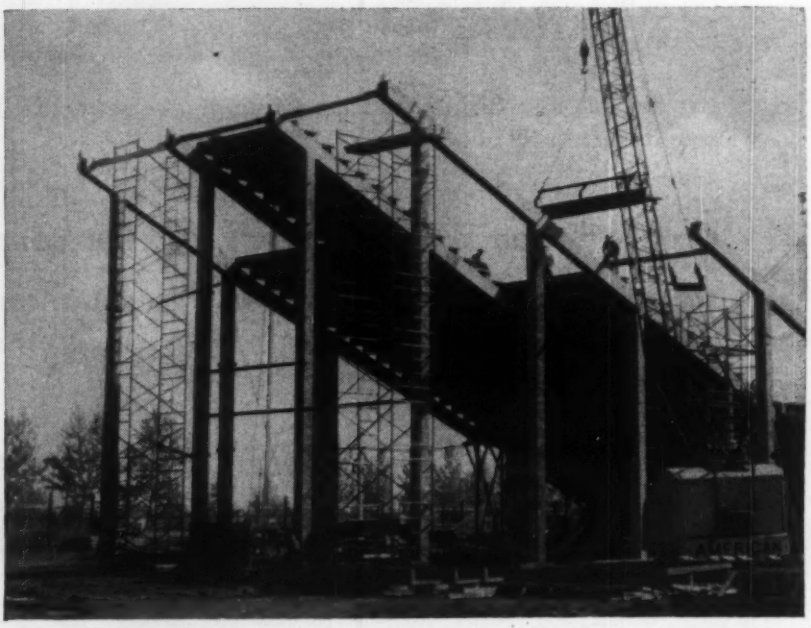
Ordinarily, precast members are not readily adaptable to continuous construction, and the accurate positioning of joints for fast and easy erection is sometimes hard to achieve.

There are many fine points that affect the decision as to when to precast, but perhaps the following example can present some new approaches to the problem, and demonstrate the applicability of precasting—even in continuous construction:

The city of Edmonton, Alberta, originally estimated that a recently completed grandstand would cost $40 per seat, including mechanical equipment and locker rooms. This estimate was made on a plan that called for precasting the seat sections alone, and it had been picked by the city commissioner as the cheapest way to build the structure. As first planned, the grandstand was to have 8,000-seats.

Shortly after design work had started, the seating capacity was increased to nearly 9,400 seats, although the length of the structure was limited to a definite maximum figure. This meant a higher structure was needed.

• **Bids way under estimate**—It was assumed that the money allotment would not cover the cost of the new and more expensive design, unless some cost-saving method were found for the structural framing. But upon taking bids, it was found that the lowest called for an expenditure of only $28.75 per seat. The breakdown without electrical mechanical or locker rooms, ran to $16.90 per seat.



FROM THE REAR, thinness of 41-ft columns is apparent. Formwork for top guard wall will be suspended from cantilevered beam ends.

The low price was actually attained, through precasting almost everything except the lower beams, an 8-ft 6-in. wide crosswalk, and the short columns, all at the front of the grandstand and the 6-ft high top guard wall. A number of jointing innovations for exact positioning of column tops and for applying precasting to continuous construction made possible considerable savings in labor and materials. About 1,000 seat sections, 96 columns and 48 beams were precast.

The grandstand has six transverse bays with columns on 17-ft centers for the three lower bays at the front of the structure, and on 15-ft 9-in. centers for the three higher bays. Longitudinally there are 23 bays at 16-ft centers. Seat sections are 2½-in. slabs with thickened edges, and the risers which act as beams are 4 in. thick. Columns are 15 in. square and have a maximum height of 41 ft 7½ in.

• **Continuity preserved**—In each transverse bent, two precast beams 33 ft and 26 ft 6 in. long were used on the high portion of the grandstand. To preserve continuity of the beams (all the way from front to back of grandstand) two special beam splices were required: one between the precast beams and one joining the end of the precast beam with the cast-in-place lower beam. Both splices were at quarter points in a span between columns (point of least moment).

During erection of these beams the extra dead load moment from the long end cantilever (¾ of a span) of the precast beam was not great and could easily be provided for. However, a device was used to lift the long end and transfer some of its weight to the short cantilever end of the other beam. Top, bottom and diagonal bars were then drawn together and welded, the joint formed and filled with high strength concrete with some calcium chloride admixture to accelerate hardening.

• **Rapid column erection**—A major detail from some of the author's earlier designs made possible the erection of a column in a few minutes. No shoring is necessary for erection of the tall precast members, and by means of a screw arrangement, the column top can be adjusted to an exact position. Anchor and column bars are joined by welding. The advantage of easy and accurate adjustment of columns made it possible to thread beams onto anchor bars projecting from the tops.

As designed and constructed the columns look very slender. But even the tallest back columns are stressed to only 85% of the amount allowed by the long column formula and 25% of that for the short column. Wind load on the back wall (20psf) was actually more critical than buckling strength. The long column sections were thoroughly braced against lateral deflection and buckling, without being braced inward.

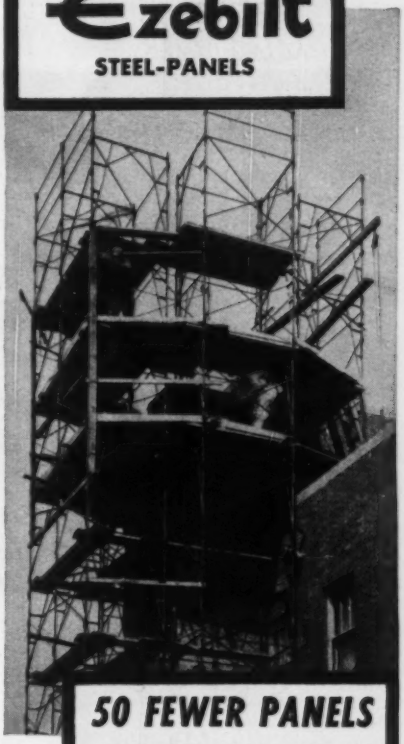
Total time required for precasting, erection and completion of structural part of the grandstand was 90 days.

Architect and engineer for the grandstand was the firm of Rensaa & Minsos, Edmonton, and the general contractor was Bennett & White, Ltd., also of Alberta.

(*International continued on page 68*)

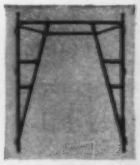
JOINING beams by welding the reinforcing maintains continuity. The joint is at a quarter point (least moment), and the diagonal bars take the shear.

SCAFFOLD FASTER WITH UNIVERSAL Ezebilt STEEL-PANELS



50 FEWER PANELS SAVED ONE-THIRD IN ERECTION TIME

HERE'S HOW:



This contractor used standard 6½-ft. high, Universal Ezebilt panels to scaffold tower, rather than shorter panels. RESULT: *He cut 50 panels from his needs—saved almost one-third in erection time alone.*

Up Faster no bolts to master

With the Original **GRAVITY-LOCK**

Completely Automatic—just slip zinc-plated brace ends into sleeve on the panel leg—rust-proofed trigger locks automatically, by gravity.

Distributors offer Free Engineering Service—Planned to Help You Save

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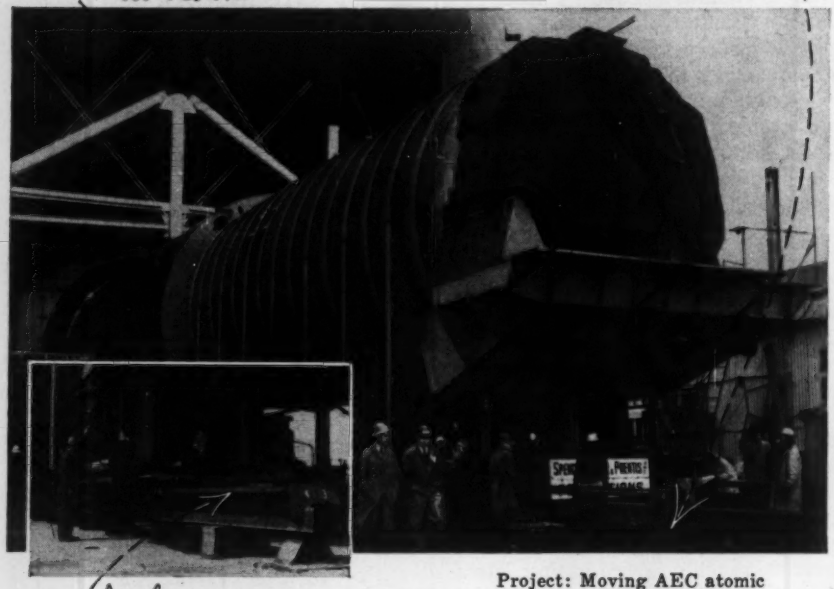
ZELIENOPLE 3, PA.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

½ inch horizontal tolerance maintained

Trestle built over filled-in land



Jacks are of our own design

Project: Moving AEC atomic power plant for General Electric and General Dynamics, at Knolls Atomic Power Laboratory.

TRICKY PROBLEMS SOLVED AS 1300-TON ATOMIC POWER PLANT IS MOVED

For the sake of speed and ease, the prototype hull for the submarine *Sea Wolf* was built, to near-completion, outside the test sphere. It then became the job of Spencer, White & Prentis, as low bidder, to move it from its construction slab into the sphere.

With deflection tolerances limited to ⅛-inch on the end housing sensitive equipment, the big 1300-ton unit had to be handled with the most exacting care. On request, we will be glad to explain the methods devised by our skilled specialists—particularly for the tricky problem of transferring the hull to the steel tracks and runner beams on which it was moved the required 222 ft. Inset photo shows the jacks used for motive power, these being of our own design and manufacture.

LITERATURE ON REQUEST

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INTERNATIONAL

Blasting a Seaway

Canada to knock top off underwater mountain

Ripple Rock, a deadly undersea peak whose jagged top lies within nine feet of the surface at low tide, is going to have its top blasted off to clear the inside Seaway Passage to Alaska, about 120 mi. north of Vancouver, B. C.

Famous and fatal—it has caused more than a score of shipwrecks since 1875—the huge rock lies in Seymour Narrows in the series of fiords and islands between Vancouver Island and the Canadian mainland. These islands running all the way up the British Columbia coastline form a sea passage extending 850 mi. northward from the U. S. border.

In a futile attempt during the last war nine lives were lost when Canada attempted to cut 35 ft off the top of the rock. The new plan will involve setting off some 2,000,000 lb of high explosives over a two-year period from tunnels within the rock. Cost is still indeterminate.

Plans call for sinking a 450-ft shaft on the eastern shore of Seymour Narrows just opposite and a half-mile from Ripple Rock. A tunnel will run from the bottom of the shaft to a point under the rock and then riser tunnels will bore upward to the peak with galleries branching out at the top of the risers. Explosives will be placed in the galleries and set off in sequence. Ripple Rock will be left about 40 ft shorter than it is at present.

From a defense standpoint, the Inside Passage to Alaska provides a protected sea lane to the southern termini of overland routes to the major air and supply bases for our northernmost defense rings. The passage has less than a dozen major entrances from the Pacific Ocean and all of these are easily guarded. The sea floor of the island-bound waterway is typified by Ripple Rock; its jagged contours would easily balk enemy submarines.

New Nile Dam

Uganda is making a survey to find the best site for a new hydroelectric dam on the Nile above Jinja, where the river begins flowing north from Lake Victoria to the Sudan and Egypt. The proposed dam, which would turn Lake Victoria into the world's largest reservoir, will be needed by 1962 to reinforce the $70-million Owen Falls hydroelectric scheme.

NEW "KING-SIZE" CARTRIDGES SAVE TIME AND LABOR

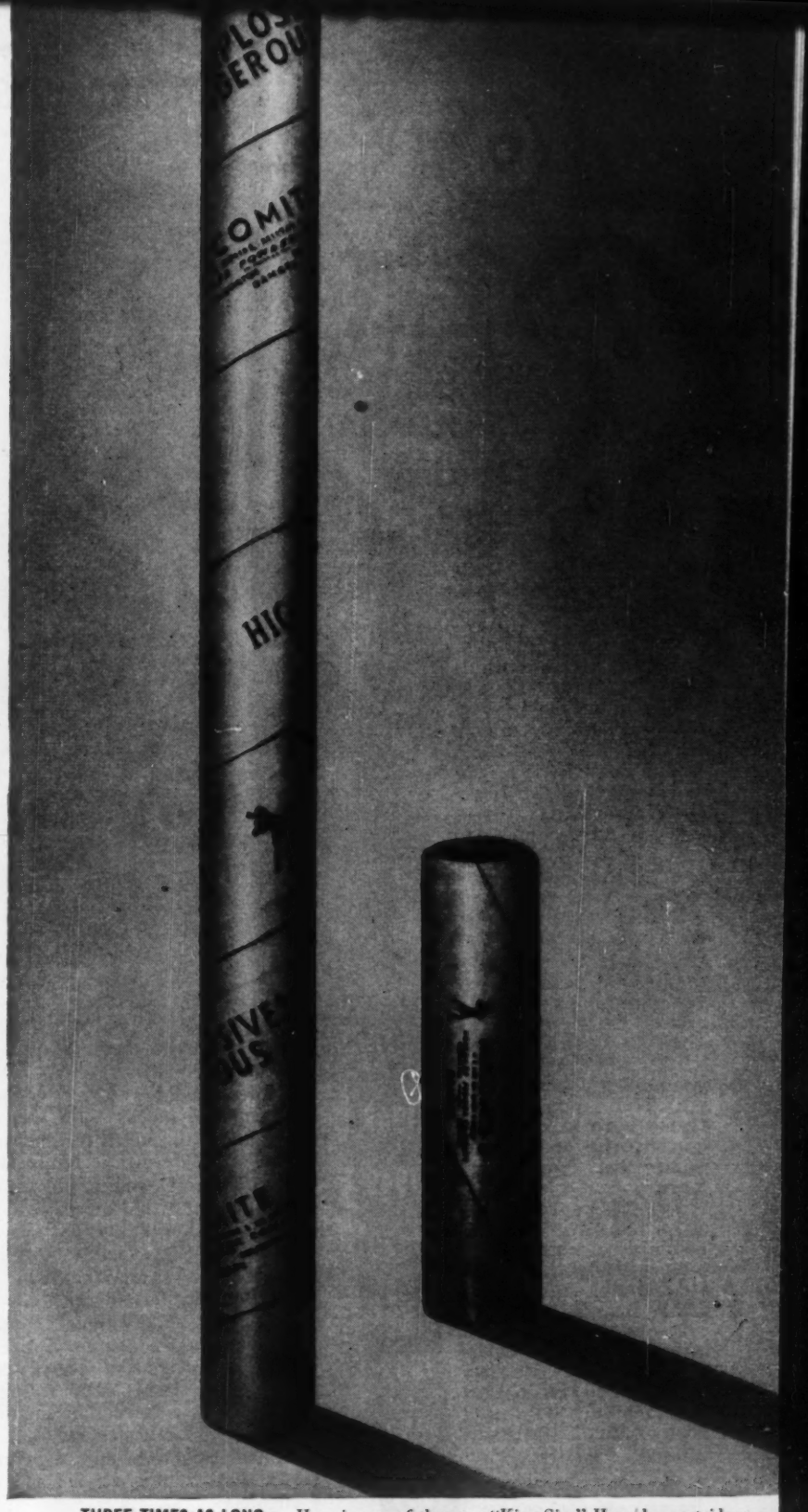
Now, Hercules produces "King-Size" cartridges in lengths of 24, 20, 16 and 12 inches, and in diameters of 1¼, 1½, 1¾, and 2 inches.

Available in all types of Hercules® dynamite, these long-length, small-diameter cartridges are now in full production.

"King-Size" cartridges make possible a more uniform fragmentation through the discharge of a single column of explosive. Their use means substantial savings in valuable time and labor in loading holes.

Hercules designed, tested, and installed special new packing machines for these "King-Size" cartridges.

Our technical service and sales representatives will be glad to discuss with you how these "King-Size" cartridges can go to work for you.



THREE TIMES AS LONG... Here is one of the new "King-Size" Hercules cartridges—24 inches in length, shown alongside the same grade in the conventional 8 inch size.

HERCULES

HERCULES POWDER COMPANY
INCORPORATED
Explosives Department, 940 King St., Wilmington, Del.

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N.Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

Is the Protection You Buy TIME-TESTED Like TAPECOAT ... the Quality Coal Tar Coating

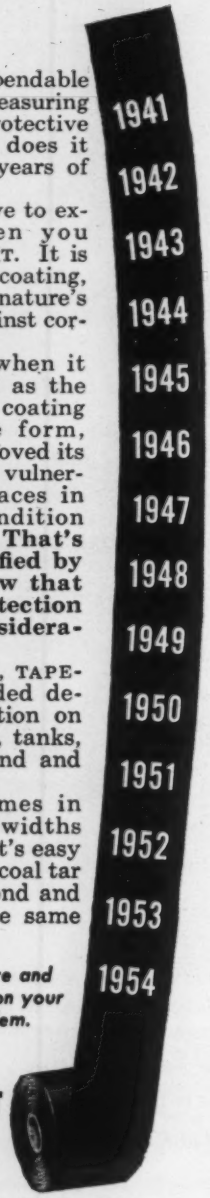
There is one dependable yardstick for measuring the quality of protective material: How does it stand up over years of service?

You don't have to experiment when you specify TAPECOAT. It is quality coal tar coating, and coal tar is nature's own defense against corrosion.

Since 1941, when it was introduced as the first protective coating in handy tape form, TAPECOAT has proved its ability to keep vulnerable steel surfaces in "like new" condition year after year. **That's why it is specified by those who know that continuing protection is the first consideration.**

For 13 years, TAPECOAT has provided dependable protection on pipe, pipe joints, tanks, etc., above ground and under ground.

TAPECOAT comes in handy rolls in widths from 2" to 24". It's easy to apply and the coal tar provides both bond and protection at the same time.



Write for brochure and recommendations on your corrosion problem.

The TAPECOAT Company

Originators of Coal Tar Tape Protection

1551 Lyons Street • Evanston, Illinois

MEN AND JOBS

Dana Young

Dana Young Appointed Dean, Yale School of Engineering

Dana Young, chairman of the department of civil engineering and Sterling Professor of civil engineering at Yale University, has been appointed dean of the Yale School of Engineering, effective July 1. He succeeds Walter J. Wohlenberg, who will remain on the Yale faculty.

A specialist on vibration and elasticity of building materials, Young has been associated with many leading government and industrial projects. He participated in the U. S. Navy's development of guided missiles and did war research work at Johns Hopkins Laboratory of Applied Physics during World War II. More recently he has served as a consultant to Sandia Corporation, testing facility for atomic weapons, and is now the ASME representative on the advisory committee to the U. S. National Bureau of Standards.

After receiving a degree in civil engineering from Yale, Young went to Texas as construction engineer for various oil companies and later joined United Engineers and Constructors, Inc., Philadelphia, serving as a design engnieer.

Commencing in 1934, he taught civil engineering at the University of Connecticut for several years and then moved on to the Universities of Texas and Minnesota where he taught engineering and applied mechanics before coming to Yale in 1953. In the meantime, Young received his master's degree from Yale and a doctor's degree in engineering mechanics from the University of Michigan.

In the industrial field, he has been a consultant to Jefferson Chemical Co. and Humble Oil & Refining Co. on problems of structural design and vibration, to Minneapolis-Honeywell Corp. on aircraft landing devices, and to General Mills, Inc. on weapons research.

Home Builders Official Joins New York Company

Leonard G. Haeger, formerly director of the Research Institute and the Construction and Research Department, National Association of Home Builders, Washington, D. C., became vice president and technical director of Levitt & Sons, Inc., of Manhassett, N. Y. last week. In his new position, Haeger will have large responsibilities in the planning and development of a Levitt community which will be located in New Jersey, across the Delaware River from Levittown in Bucks County, Pa.

Haeger earned a master of architecture degree at Washington University, St. Louis, and served during the war, as an officer on overseas base planning with the Bureau of Yards and Docks, U. S. Navy.

After the war he joined the government's national housing agency as architectural and engineering consultant and later became head of the technical staff and assistant director of the Research Division, Housing and Home Finance Agency. In 1951 he joined NAHB as director of what was then known as the Technical Service Division.

Blaw-Knox Official Serves Sand & Gravel Association

The Manufacturers Division of the National Sand & Gravel Assn. has re-elected Robert P. McKenrick, vice president and general manager of Blaw-Knox Co.'s Construction Equipment Division, as chairman.

The association, in conjunction with the National Ready Mixed Concrete Assn., maintains a joint laboratory for improvement of concreting materials, methods and quality. Supported by equipment manufacturers, it seeks to advance the progress of sand-gravel and concrete industries.

As chairman of the Manufacturers Division, McKenrick will serve as a member of the association's board of directors.

(*Men and Jobs continued on page 72*)

2001 is exclusively a BUTLER NUMBER

It means a lot to you—2001 is the number of operations performed on an average-sized Butler steel building. There are actually 2001 precision operations done by Butler, including die formings, gang punching, miterings, weather sealings—that are not general steel building practice.

It means quick erection—Every piece is finished. No shearing, welding, shaping in the field. No nails, no gingerbread cover-ups.

It means sound buildings—No gaps, no joints to flash: Your building is as airtight and weatherproof as any conventional type.

It means low cost—The saving in unnecessary metal alone is considerable. With every part completely finished, erection costs are low.

2001 is not a fancy phrase like "a thousand and one." It's real. It is what makes Butler steel buildings different—better—and most economical in the long run.

Extras like these make **BUTLER** *steel buildings your best buy*

Rigid frame gives you clear spans. No interior posts, every cubic foot of interior space is usable.

Bolts—all bolts! Nails or hooks won't do in Butler buildings. Nothing holds and seals like a bolt.

Mitering is done where sidewalls meet eaves... a Butler extra that assures permanent joints.

Weathersealed windows and base. Factory-sealed, they are flush at every point and rain-tight.

Die-formed roof-ridge panel seals the ridge, eliminates makeshift field flashing.

High-rib panels are die-formed, have great deflection strength—easier to seal, better looking.

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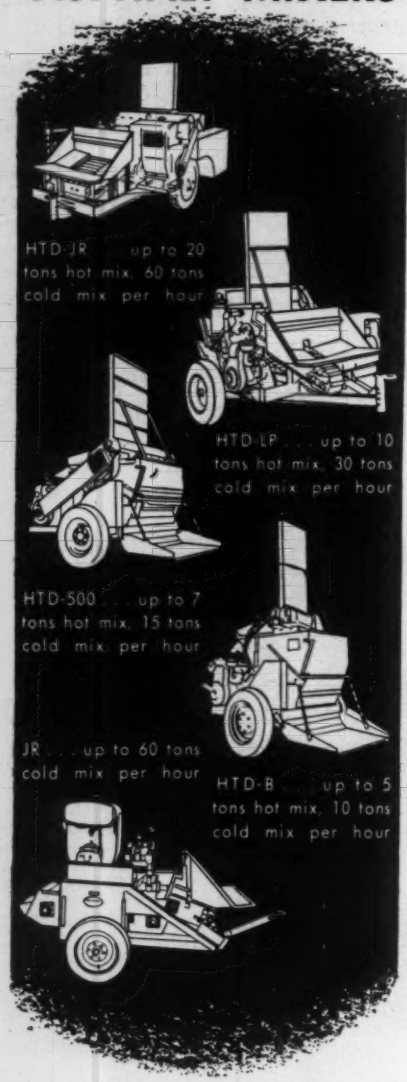

HTD-JR . . up to 20 tons hot mix, 60 tons cold mix per hour
HTD-LP . . . up to 10 tons hot mix, 30 tons cold mix per hour
HTD-500 . . . up to 7 tons hot mix, 15 tons cold mix per hour
JR . . . up to 60 tons cold mix per hour
HTD-B . . up to 5 tons hot mix, 10 tons cold mix per hour

. . . for resurfacing and patching in any season

DESIGNED for economy of operation and fast production, the McConnaughay line of Multi-Pug Asphalt Mixers meets every need for most resurfacing as well as all types of pavement patching. Working on location, these mixers provide the exact amounts of materials needed (never too much or too little); and McConnaughay HTD models are the only mixers which effectively remove both moisture and solvents from bituminous mixtures . . . positive assurance that patches and resurfaced areas will set up hard. Write, wire or 'phone for details and specifications.

K. E. McConnaughay
LAFAYETTE, INDIANA

Raymond Concrete Pile Co. Names Several New Officers

In a series of top-level promotions, Raymond Concrete Pile Co., New York foundation and heavy construction firm, has elected Myron W. Krueger to the newly created post of executive vice president. Krueger joined the firm in 1948 as treasurer and will combine the functions of that office with his new duties.

Elected at the same time as vice presidents are Donald W. Moss, who will have general direction of domestic sales; James Pinnel, who will be in charge of all domestic construction; and Herbert M. Crowley, who will supervise general planning.

Newly elected assistant vice presidents are Gordon F. A. Fletcher, in charge of the boring division, and J. P. Cummins, who will direct the sales activities of the eastern zone.

Engineers Appoint Manager For Texas Turnpike Project

W. O. Jones, Fort Worth, Texas, has been named engineer-manager for Associated Turnpike Engineers, engineering combine for the Fort Worth-Dallas Turnpike (ENR, Feb. 24, p. 26).

Since 1946, Jones has been city manager of Fort Worth, which he has served in various capacities for 34 years. He was the 1952 recipient of the Samuel A. Greeley service award of the American Public Works Assn., of which he is a past president, and was honored as Fort Worth's "Engineer of the Year" in 1953.

Associated Turnpike Engineers consists of Freese & Nichols and Joe Rady of Fort Worth, and Powell & Powell and Forrest & Cotton, of Dallas.

Men and Jobs Briefs . . .

• **Careers**—**Robert H. Dodds,** member of the ENGINEERING NEWS-RECORD editorial staff for 10 of the past 18 years, joins Lockwood, Kessler and Bartlett, photogrammetric engineers of Great Neck, N. Y., as development engineer. He came with ENR as an editorial assistant in 1937 upon graduation from Iowa State College, remaining until 1940. After service with the Navy Civil Engineering Corps and as an associate professor of civil engineering at Colorado A. and M. College, Dodds returned to ENR in 1948 as associate editor in charge of contracting and heavy construction.

Charles Tait is appointed port director of San Francisco . . . **Carl H. Krakover** is elected chairman of Philadelphia Airport Improvement Authority . . . **J. Ray Heath,** head of the engineering firm of Heath, Hammond, Collier & Associates, is appointed water superintendent for Seattle.

• **Associations**—In May, **Richard E. Heartz,** head of Shawinigan Engineering Co., Montreal, will become president of Engineering Institute of Canada . . . **T. L. Cottam,** manager of Hunzinger Construction Co., is re-elected president of General Contractors Assn. of Milwaukee . . . **C. Sander,** general superintendent of U. S. Steel's Consolidated Western Steel Division, is appointed to the technical council of the board of directors of the American Welding Society . . . **Carlton C. Robinson,** Portland, Ore., joins the Traffic Engineering Division of the Automotive Safety Foundation.

• **Business**—U. S. Steel's American Bridge Division appoints **J. D. Rollins** vice president in charge of engineering activities . . . **Gilbert D. Fish, A. Roger Kelley, Erik B. J. Roos, Stephen D. Teetor,** and **Harold S. Woodward** become partners in the firm of Seelye, Stevenson, Value & Knecht, consulting engineers, N. Y. . . . **Robert L. Cashen** is elected vice president and eastern district manager of H. K. Ferguson Co., Cleveland.

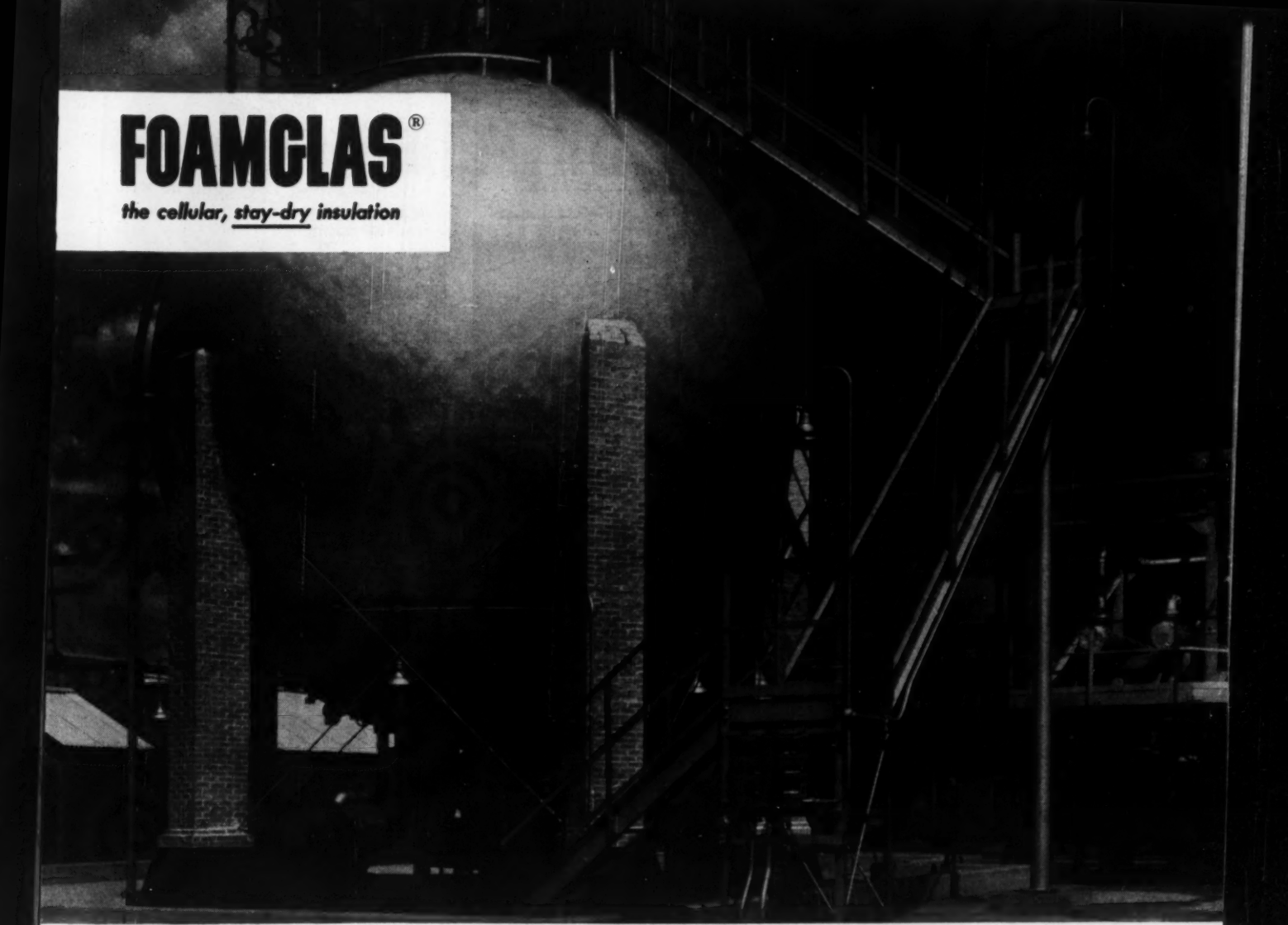
B. J. Ottis joins the consulting engineering firm of Samborn, Steketee & Associates of Toledo, Ohio—he'll be in charge of industrial plant layouts . . . **C. Mortimer Throop** and **Elliott Feiden** form their own consulting structural engineering firm in New York under the name of Throop & Feiden . . . **Toombs and Co.,** Atlanta architects, has changed its name to Toombs, Amisano & Wells.

• **Retirements**—After more than 21 years with the Corps of Engineers in Portland, Bonneville and Walla Walla, **Terrence F. Johnson,** civil engineer with the Portland District . . . **Charles E. Sloan,** engineer of bridges and buildings for the B&O Railroad—he joined the engineering department in 1913 . . . **V. J. Ostrander,** as superintendent of operation and maintenance, N. Y. State Department of Public Works, after 49 years of service.

• **Honors**—Among the 100 distinguished alumni honored by New York College of Engineering at its centennial celebration is **I. Vernon Werbin,** New York attorney and professional engineer.

FOAMGLAS®

the cellular, stay-dry insulation



Insulation Contractor: Combustion Equipment & Insulation Co., Cleveland, Ohio

SOHIO gets efficient desalting because . . .

Spillage-proof FOAMGLAS insulation stays effective to hold precise temperature

Efficient electric desalting to remove salts and other impurities from crude charging stocks demands precise temperature control throughout the process. The influent temperature (180° F to 220° F depending on viscosity of crude) must be held constant until effluence. Since there's no exchange of heat inside the sphere, it must be insulated very effectively.

For six years Standard Oil Company (Ohio) has maintained peak desalting efficiency by insulating their spheres in Cleveland, Lima and Toledo with FOAMGLAS. This unique cellular glass insulation benefits SOHIO three ways:

1. **Spillage-proof,** moisture-proof FOAMGLAS retains its insulating value . . . avoids fire hazard.
2. **Easy-to-apply** FOAMGLAS blocks are lightweight but very strong, readily applied to sphere, eliminating insulation supports.
3. **Effective insulation** holds temperature required for electric field to break continuously the water and oil emulsion. It also prevents temperature drop near vessel wall . . . avoids thermal currents which would interfere with process.

Whether you insulate spheres or piping, buildings or cold storage spaces, it'll pay you to write for FOAMGLAS sample and literature on your specific needs.

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Dept. K-35, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

2" thick FOAMGLAS blocks cut to 12 x 12 size were laid diamond shape on SOHIO'S desalter sphere in Toledo. Two Nelson studs were welded through each block and secured with recessed Tinnerman speed clips. After asphalt cutback (Insulmastic 4010)—glass fabric—cutback application, the surface was finished with an asphalt base aluminum paint.

MAIL COUPON FOR NEWEST DATA ON DOORS FOR EVERY MAJOR ENTRANCE NEED

INTERNATIONAL STEEL COMPANY
2056 Edgar Street, Evansville 7, Indiana

Send me without obligation my personal copy of the new 1955 International Doors for Industry and Aviation.

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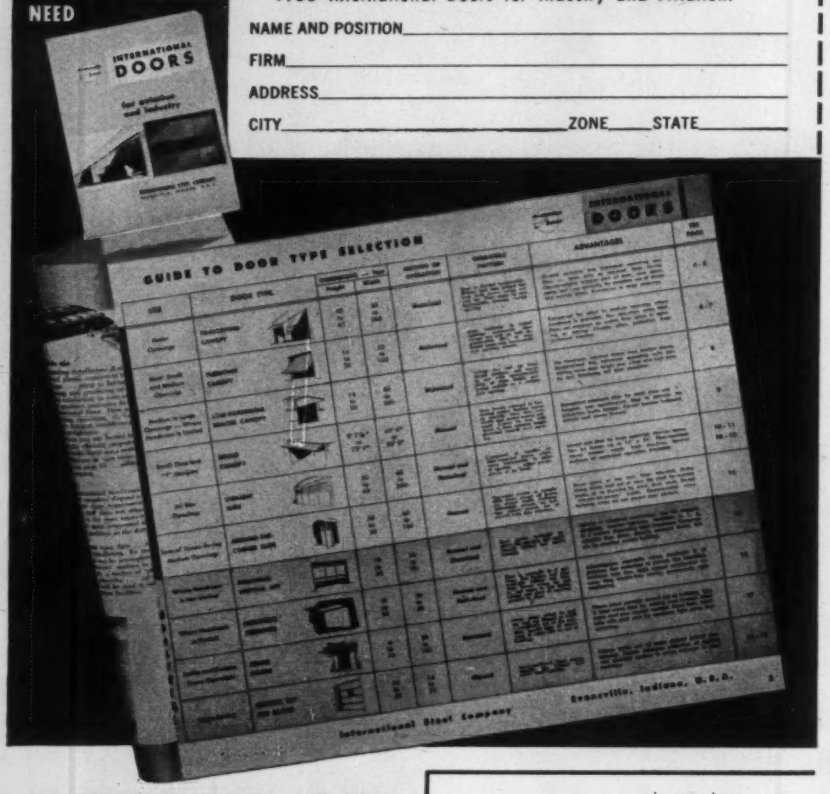
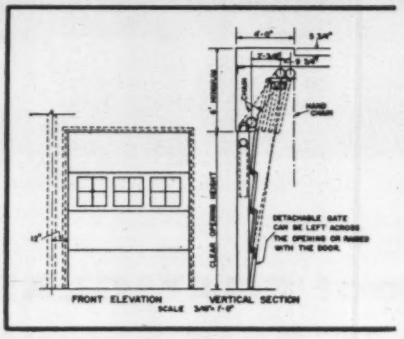


HOW TO GET *Most Door Per Dollar*

The matter of economy combined with efficiency is the major problem of American Industry, faced with the problem of designing new entrances — both for the multitude of industrial structures now being planned or those actually under construction. To simplify selecting the type of door that specifically meets any condition, the new International Steel Door Manual offers the new, exclusive "Door Selector." Architects, engineers, and contractors will find this an excellent reference source in determining door type requirements. Use the coupon above to request your copy, today.



Above drawing details a typical International Multi-Section Vertical Lift Pier Door — such as installed at New York's recently completed Pier 57. Door leaves stack directly above and behind opening, permitting use of storage space right up to the entrance and above door level. Leaves are "nested" when door is opened — do not obstruct interior lighting or sprinkler system. One of the many International-Engineered Doors for every need. See Sweet's Architectural File.

INTERNATIONAL SERVICE

2056 EDGAR STREET
EVANSVILLE 7, INDIANA

INTERNATIONAL STEEL COMPANY

OBITUARIES

William H. Burton, 55, an engineer with the Kentucky State Highway Department, died Feb. 10 in Louisville, Ky. A native of Lexington, he went to Louisville in 1939 to work in the road department's right-of-way division.

Oswell P. Southerland, 43, of Raleigh, N. C., area engineer for the Soil Conservation Service of the Department of Agriculture, died Feb. 10. A native of Durham, N. C., he obtained his civil engineering degree from Duke University in 1934.

George G. Foster, 67, former civil engineer for Cleveland Electric Illuminating Co., died at Cleveland Feb. 11. He had been with the company 20 years before retirement, and prior to that had been associated with Hunkin-Conkin Construction Co. and Craig & Curtis, both Cleveland firms.

Timothy G. Griffin, 69, New York construction executive and inventor of the Griffin Wellpoint, a system for clearing water from construction sites, died Feb. 21 in Yonkers, N. Y. Griffin, a leader in soil stabilization, founded the Griffin Wellpoint Corp. in 1934 and five years later established the Griffin Equipment Corp. He was president of both New York concerns at the time of his death.

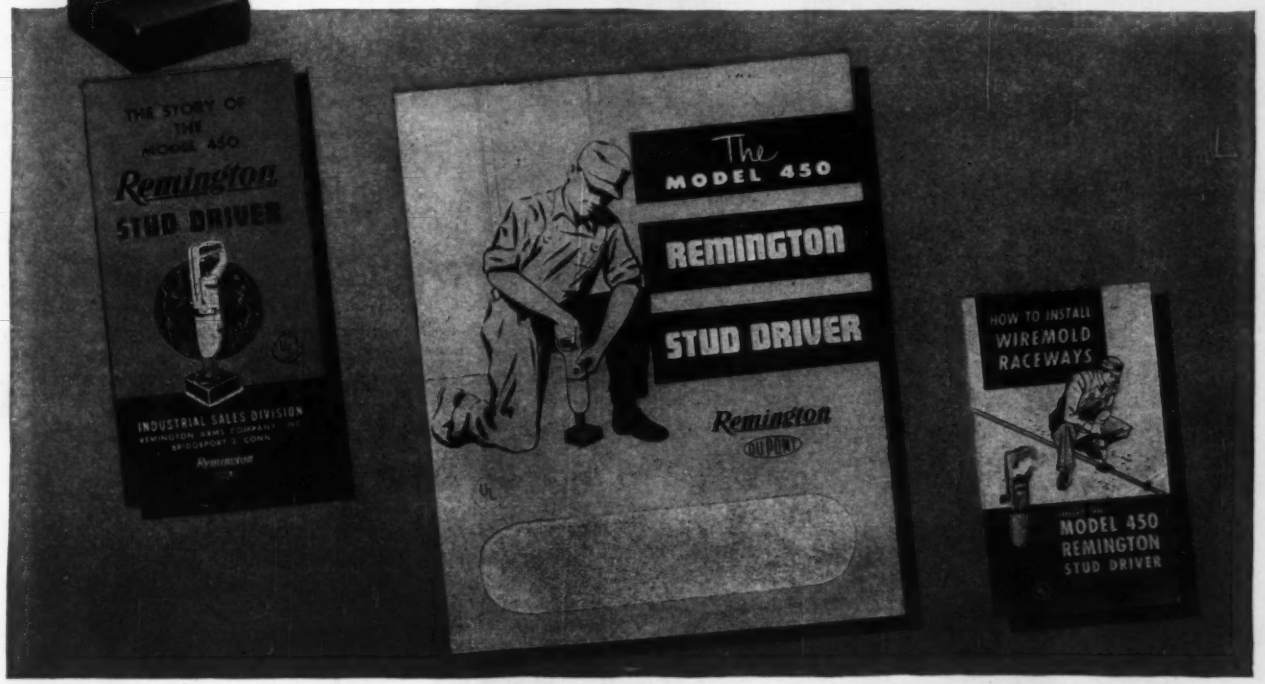
Neal D. McDowell, 56, district engineer for the Maine district of the U. S. Bureau of Public Roads, died in Augusta Feb. 4. He received his engineering degree from Norwich University in 1924, and four years later started his career with the road bureau as a highway bridge engineer. Before being assigned to the Maine post he served in district offices in Montpelier, Vt., Alexandria, Va., Washington, D. C. and Harrisburg, Pa.

William B. Ferguson, 58, who was resident and district engineer for the North Carolina State Highway Commission for some 30 years, died Feb. 22. Included among his projects was construction of the Asheville-Weaverville highway 27 years ago.

J. D. Fine Boggs, 64, engineer for Mann Construction Co., Pasadena, Texas, died Feb. 20 in Houston. He received his engineering degree from Purdue University. In 1942 he was sent to Houston by the Maritime Commission to serve as plant manager of the Todd Houston and San Jacinto shipyards.

Read how the REMINGTON STUD DRIVER cuts fastening costs!

Free booklets show where powder-actuated tool can be profitably used



THE STORY OF THE REMINGTON STUD DRIVER. Here's an easy-to-read illustrated booklet that shows you how the tool operates and points out its important features. You'll see close-ups of the Stud Driver in use, securing structural channels, furring strips and many other fittings to steel and concrete surfaces.

THE REMINGTON STUD DRIVER. A complete catalog — it shows actual-size drawings of the Remington Studs available. Another section deals with the special guards for the tool used to fit over lathing sections, flexible framing sections, wood sills and other sections and fittings.

THE WIREMOLD SYSTEM. It's a specially prepared booklet that describes anchoring Wiremold channels with a Stud Driver. A special Remington guard is available for this application. This booklet takes you step by step through the entire Wiremold Raceway & Wireway installation system.

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Remington Arms Company, Inc., Bridgeport 2, Conn.

Please send me the booklets checked.

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"If It's Remington—It's Right!"

Remington

DUPONT

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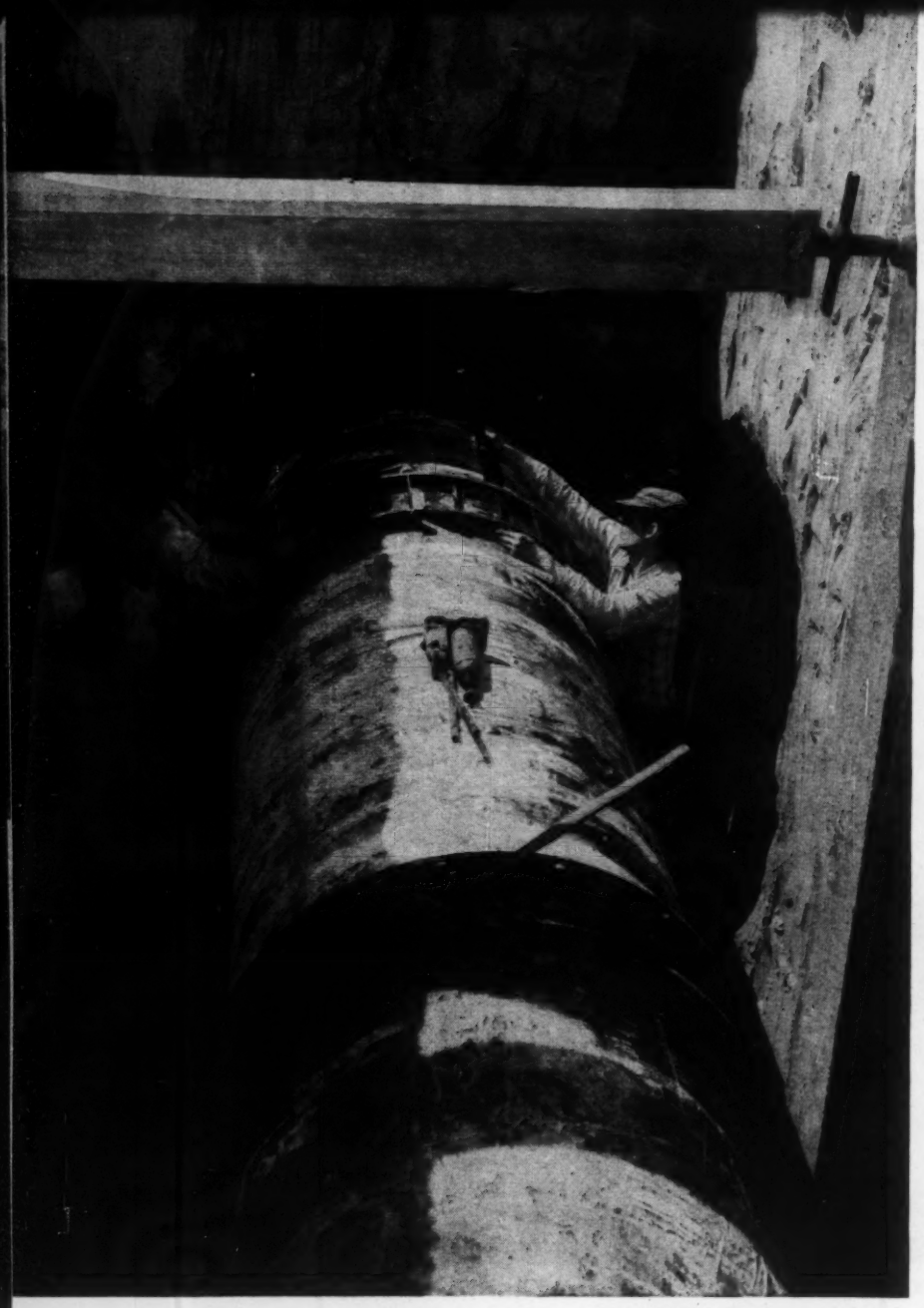


DELIVERING WATER CHEAPER

OMAHA, NEBRASKA
To avoid serious traffic jams while constructing its 48" pump discharge line through busy Omaha, Metropolitan Utilities District engineers constructed a 200-foot tunnel 25 feet below ground level. The half-mile Dresser-Coupled steel line will deliver water to a new reservoir.

Busy Traffic Scarcely Knew It

OMAHA AVOIDS TIE-UPS LAYING DRESSER-COUPLED STEEL LINE THROUGH TUNNEL

Like Omaha, growing cities everywhere are thoroughly familiar with the many advantages of steel water pipe joined with Dresser Couplings.

This modern type of construction provides city engineers and contractors with a virtually "packaged pipe line"—easy to lay out and assemble, readily adaptable to job conditions, predictable as to cost.

And speaking of costs, lighter weight steel pipe reduces budget expenditures for installation. Long, strong pipe lengths call for fewer joints, speed job completion. And flexible, bottle-tight Dresser Couplings go on fast, eliminate many specials, make leakage allowance for joints unnecessary. Resilient Dresser gaskets absorb shock, vibration.

In addition to assuring low over-all installed cost, a Dresser-Coupled steel water line sustains high carrying capacity, "lives in the ground" without maintenance . . . results in *delivering water cheaper.*

√ *Wherever water flows—steel pipes it best!* Always put steel pipe and Dresser Couplings in your specifications.

DRESSER®

75th ANNIVERSARY THE DRESSER WAY 1880-1955

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales offices also in: New York, Philadelphia, Chicago, Toronto.

LEGAL

Damages for Defective Work

A contractor brought an action to recover the amount allegedly due under a contract to remodel a building. The owner interposed a counterclaim for the full amount paid the contractor, claiming that the rooms of the house as remodeled were smaller than those that were shown according to the plans.

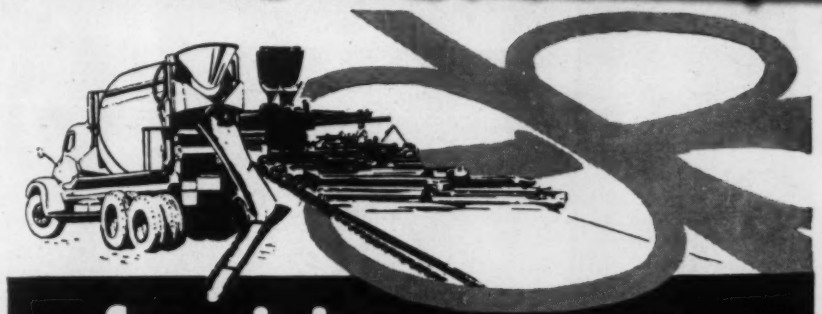
The contractor, in his action, claimed that since the owner had made payments after the interior partition walls had been erected, and after he had knowledge that the rooms were smaller than that indicated on the plans, he had waived his right for damages resulting from the alleged defects. The trial court sustained the contractor's contention and this determination was affirmed on appeal.[1]

Ordinarily, where the contractor had failed substantially to perform in accordance with the contract, he would not be entitled to any recovery. In the instant case, the deviation in the size of the rooms resulted from an error on the part of the architect in measuring the size of the house. The drawings showed the house to be 24 ft wide, whereas it was only 22 ft wide. This mistake was not discovered by the contractor until he had completed the additions to the outside of the building and had started to erect the interior partitions.

The contract price for the job was $6,200. The owner paid the contractor $3,500 after the exterior work was done and paid a further sum of $2,100 after the partitions were erected and lathed. He also paid $75 for extras.

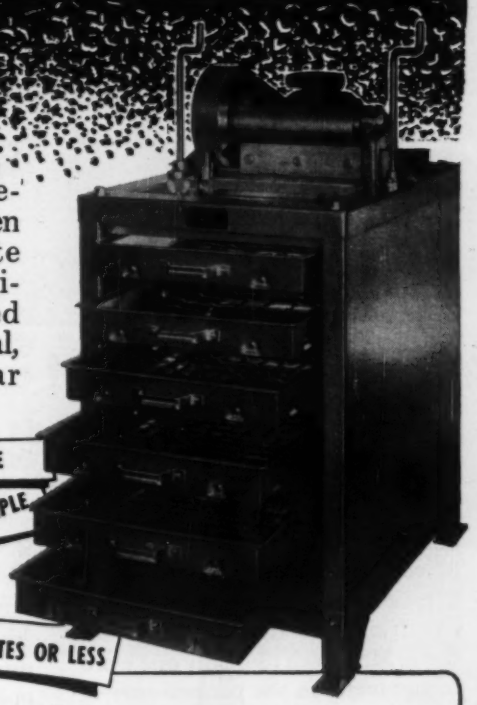
The action was brought to recover $574, the balance due under the contract. The owner counterclaimed for $5,675, the full amount he had paid to the contractor. The contractor was denied any recovery, not because the rooms were smaller than shown on the plans, but because there were certain defects in the work, and the cost of remedying these defects would be approximately the amount of the contract price remaining unpaid to the contractor.

The court in its opinion stated: "Regardless of whether the architect Berres was the agent of owners or contractor, and irrespective of who was responsible for the 2-ft mistake in measuring the length of the original house, the payment by the owners of the $2,100 after the partition walls had been erected must be deemed to have constituted a waiver by the own-



for sizing accuracy

Specify GILSON



The GILSON Mechanical Testing Screen provides an accurate check on sizing specifications for crushed stone, gravel, slag, coal, ores, and all similar materials.

RUGGED, FAST, AND ACCURATE

HANDLES UP TO ONE CU. FT. OF SAMPLE

MAKES TEST IN 5-MINUTES OR LESS

A GILSON Test Report from a supplier is a guarantee of right quality. On-the-job testing with GILSON cuts out errors and guesswork, saves time and money.

Specify GILSON and get what you want on every job

Write for additional information

Here's why GILSON belongs in your sizing specifications:

1. Makes tests quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

A Sand Attachment for handling 8-inch sieves is optional equipment with the GILSON Screen.

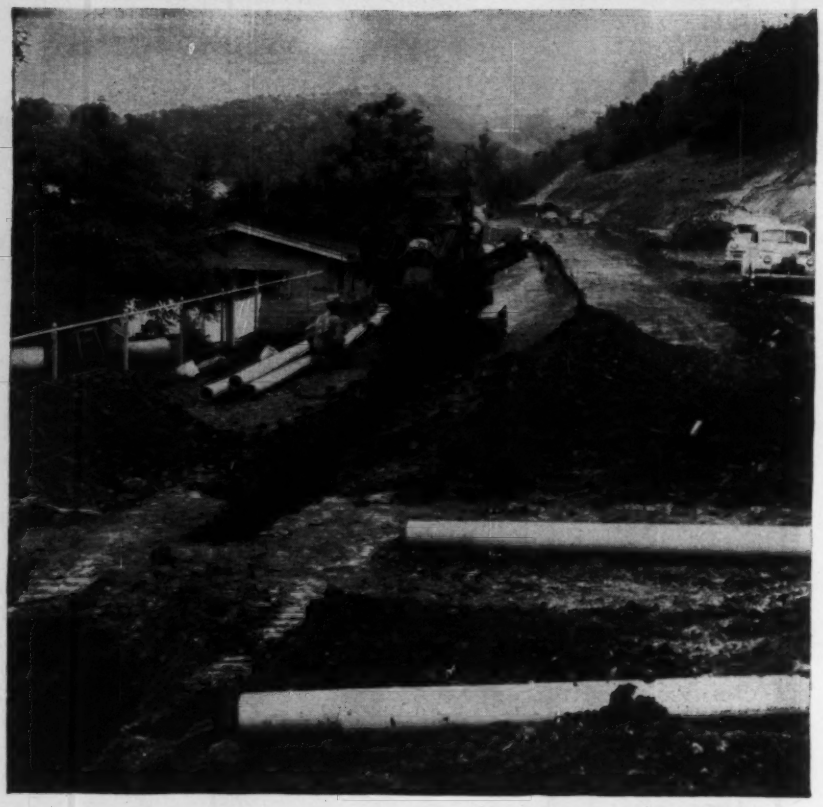
—— —— —— —— JUST ATTACH THIS COUPON TO YOUR LETTERHEAD —— —— —— ——

GILSON SCREEN CO.
Malinta, Ohio

NAME

TITLE or POSITION

Please send me further descriptive and price information on the GILSON Mechanical Testing Screen.



"We've had 17 years of excellent performance on 500 jobs by Clevelands," says 9-time owner

FRANK BEACH, General Engineering Contractor of Concord, Calif. bought his first Cleveland in 1937. Since then he has bought 8 more Clevelands and has done over 500 trenching jobs of all kinds with them. Mr. Beach uses only one word to comment on the performance of his Clevelands—"Excellent."

Shown above is one of two Clevelands he used to cut 7,000 feet of trench, 2 feet wide by 4½ to 5½ feet deep, for the relocation of a 6-inch domestic water line for the city of Martinez, Calif. in the Pleasant Hill area of Contra Costa County, in rough-graded terrain and adobe soil.

The job called for some careful, accurate, stop-and-go digging alongside an existing 6-inch transite water line. In conditions like these, where a trencher must pick its way through numerous obstructions, Cleveland's famous multi-speed transmission, providing more than 30 *useful* digging speeds—always under finger tip control by the operator—was a big advantage.

Equally important for profitable trenching operations are the many other recognized advantages of Clevelands. Full-crawler maneuverability, compactness, versatility, dependability, fast, safe portability—these are just a few of the many reasons why Clevelands will give you the same excellent performance they have given Frank Beach for over 17 years. And they're ....

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THE CLEVELAND TRENCHER COMPANY • 20100 St. Clair Ave., Cleveland 17, Ohio

CLEVELAND

ers of any claim for damages due to the said rooms being smaller than shown on the plans. While a partial or total payment on a building contract does not constitute an acceptance of the work insofar as latent defects are concerned, such a payment by the owner with knowledge of a particular defect does constitute a waiver of such defect in the absence of any other circumstances mitigating against such a waiver. Keller v. Oberreich, 1886, 67 Wis. 282, 30 N.W. 524; Bannister v. Palty's Executors, 1874, 35 Wis. 215; Bailey v. Jones, 1928, 243 Mich. 159, 219 N.W. 629; Town of Tonawanda v. Stapell, Mumm & Beals Corp., 1935, 240 App. Div. 472, 270 N.Y.S. 377; 9 American Jurisprudence, Building and Construction Contracts, page 41, Section 54; 17 Corpus Juris Secundum, Contracts, Section 514 (3), page 1104."

(1) Guschl v. Schnidt et al., 63 N.W. 2d 759, Supreme Court of Wisconsin, April 6, 1954.

Partial Payments

Construction contracts as a general rule provide for the making of monthly payments or partial payments at various stages of the progress of the work. These payments are generally necessary to enable the contractor to finance the job. The courts have generally held that the failure to make the payments called for by the contract, justifies the contractor's abandoning the work and entitles him to recover the fair and reasonable value of the work actually performed.[1]

(1) Bauer et al. v. Smith, 119 N.E. 2d 486, 2 Ill. App. 523, Appellate Court of Illinois, May 10, 1954.

Damage from Blasting

"The law exacts from a person who undertakes to do even a lawful act on his own premises, which may produce injury to his neighbor, the exercise of a degree of care measured by the danger, to prevent or mitigate the injury. The defendant could not conduct the operation of blasting on its own premises, from which injury might be apprehended to the property of his neighbor, without the most cautious regard for his neighbor's rights. This would be reasonable care only under the circumstances. If it was practicable in a business sense for the defendant to have removed the rock without blasting although at a somewhat increased cost, the defendant would, we think, in view of the situation, and especially after having been informed of the injury that was being done, have been bound to

Superb Achievement
OF 84 YEARS OF FINE INSTRUMENT MAKING
NEW OPTICAL SYSTEM
NEW ENCLOSED LEVELING SCREWS
BERGER 1955 BRONZE TRANSIT

Every now and then a product is developed which renders inadequate such overworked words as "quality" and "improvement". The 1955 Berger Transit is just such a product. We believe it to be as fine an engineering instrument as expert design, skilled craftsmanship and superb materials can achieve.

You will observe, the first time—and every time you sight through its telescope—the clear, well-defined image —the precise stadia readings at greater distances made possible by its newly designed optical system. For example, the 6¼" Transit has a 26-power telescope with coated optics, a resolving power of 3½ seconds, effective aperture of 1.430 inches (36 mm) and field of view of 1 degree, 6 minutes.

Smooth focusing is assured by the use of an integrated rear bearing and eye piece mount; the object is easily brought into sharp focus with a negative lens actuated by a fine rack and pinion, and with a slow, even motion.

Fully enclosed nickel silver leveling screws are precisely fitted into replaceable bronze bushings. The newly designed circle guard provides greater protection for the vertical circle and permits easy reading of the vernier. Non-reflecting finish of the compass plate reduces glare. Reversion vial is *standard at no extra cost;* choice of spider web or glass reticle.

These features added to the many other advantages for which Berger Instruments are recognized the world over, make the 1955 model truly the "superb achievement of 84 years of fine instrument making".

For a lifetime of accurate, trouble-free surveying, put yourself behind this newest Berger Transit. Ask us for complete details.

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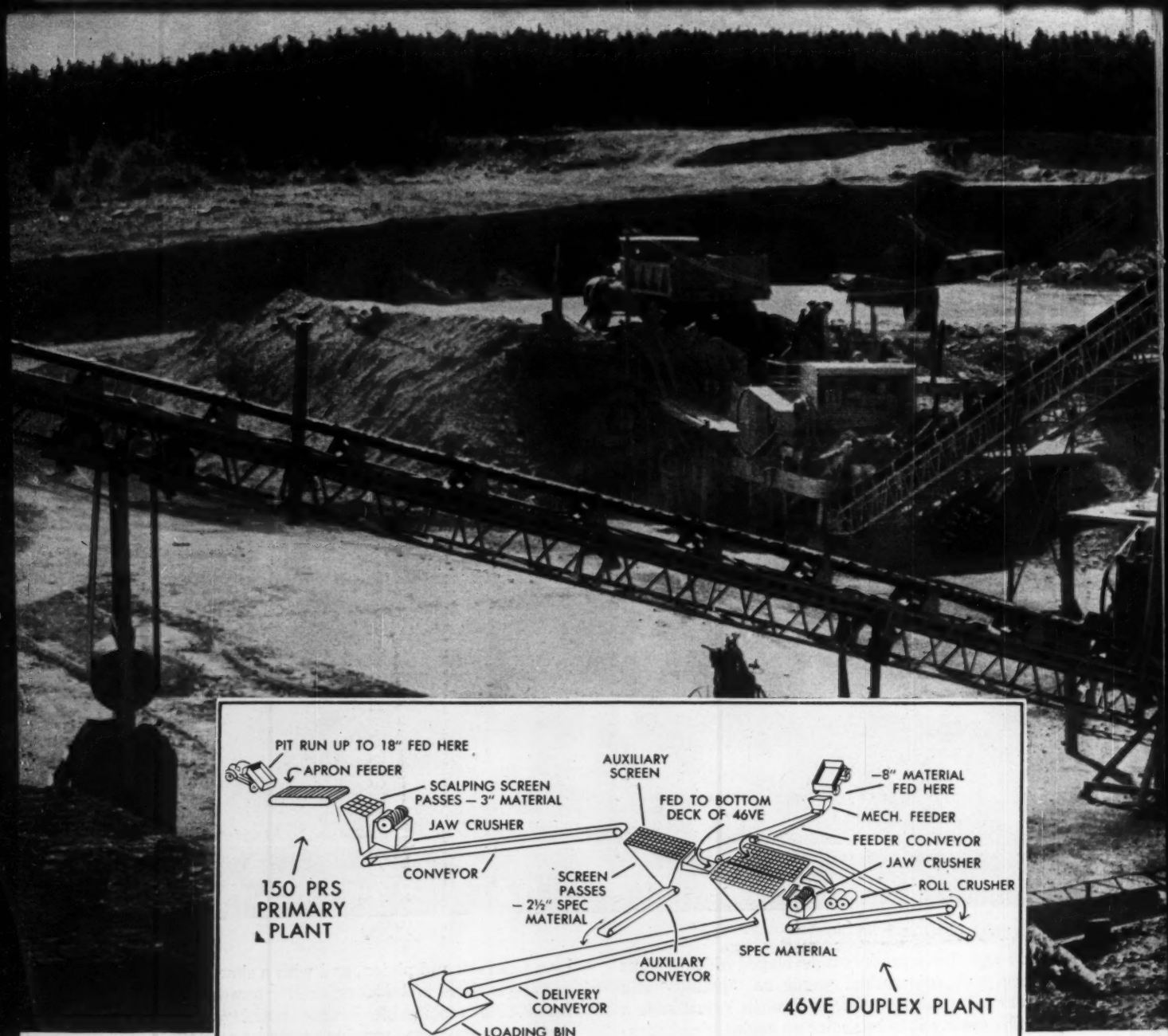


Portable crushing setup produces 5000 tons per day under freak pit conditions

● 5,000 tons is a lot of 2½" material to produce in a 10 hour day. And when you have to crush approximately half of it, you've got a job on your hands.

This was the task confronting Dexter Construction Company, which had contracted to supply material for all the roads at Canada's largest Army Base, located at Gagetown, New Brunswick.

Contractor finds freak pit conditions

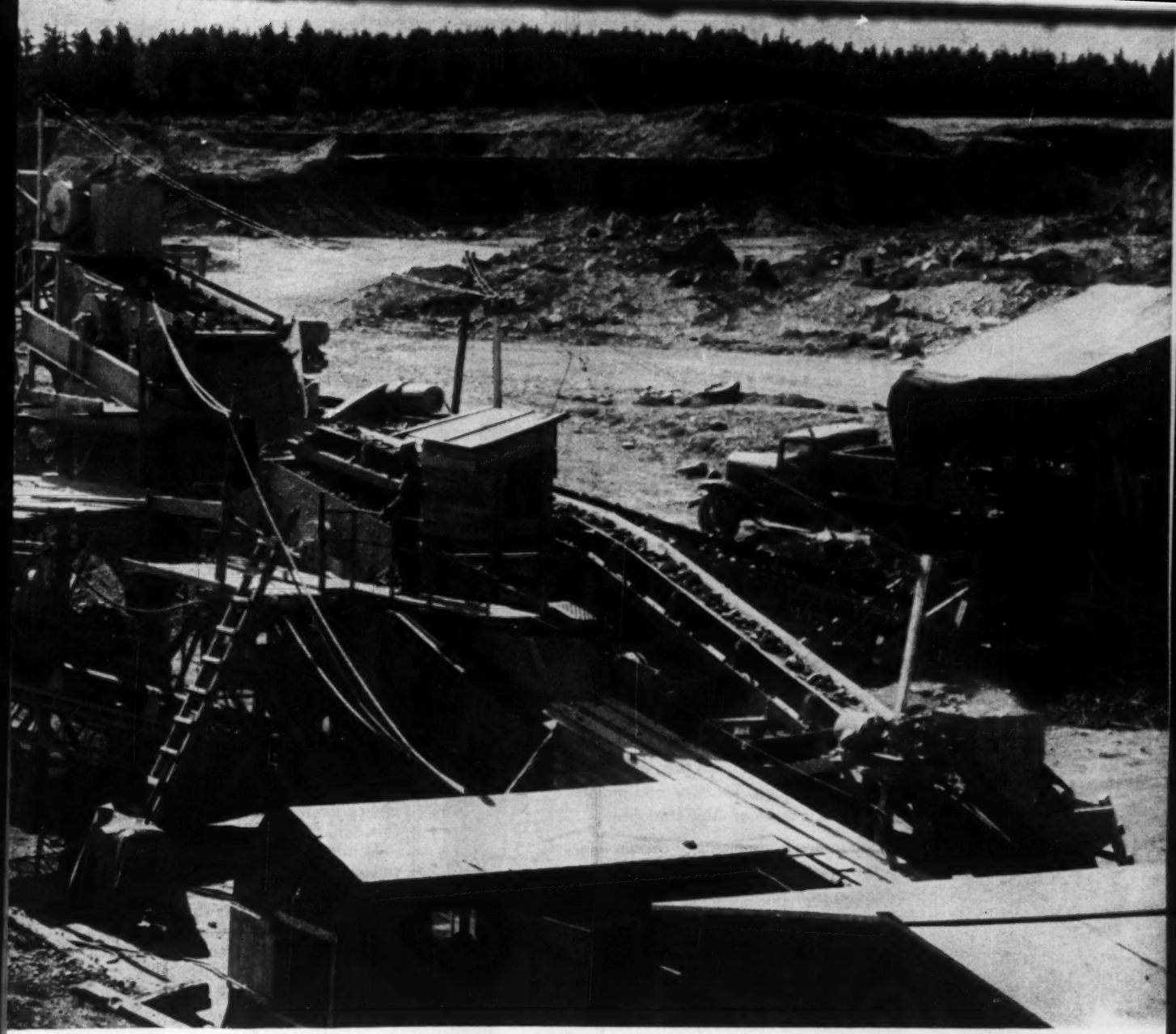
Dexter found that half their pit consisted of material ranging from sand to 8" rock. This was swell, but to their dismay, they discovered that the other half contained a high percentage of 15" to 18" boulders. These could not be crushed with Dexter's presently owned equipment, yet in order to maintain road building schedules, *all* pit material had to be used. The problem was how to obtain the fastest, most economical production.

How the problem was solved

Dexter overcame this threatened production bottleneck by installing *two* portable crushing plants. One, a PIONEER Model 150 PRS Primary plant handles material from the part of the pit which contains the boulders.

The other, a big PIONEER 46VE diesel-electric Bottom Deck Feed plant, takes the 8" maximum material from the remainder of the pit *and at the same time, serves as a secondary plant for the 150 PRS.*

By an ingenious arrangement of materials flow, output of *both* plants is delivered to a common loading point via the same 36" x 105'



PIONEER Conveyor.

Working in conjunction, these two plants utilize all pit material and produce the necessary 5,000 tons in a 10 hour day.

Why the 150 PRS was chosen

After careful study, Dexter picked the 150 PRS for the job because its scalping screen and big 2036 jaw crusher enables it to handle large rock and at the same time, maintain unusually high output. The two-deck screen located ahead of the jaw crusher, removes material under 3" so that the jaw handles only rock needing primary crushing.

How these plants team up

Crushed material from the jaw in the 150 PRS primary plant, plus the by-passed materials, are separated and sized by a 5 x 12 two-deck auxiliary screen located between the two plants. Specification material is removed here and conveyed to the loading bin.

Material in need of further processing is then fed to the *bottom deck* of the 46VE *along with pit run material containing the 8" maximum rock.*

How Bottom Deck Feed works

With bottom deck feed, specification sizes are immediately removed. Oversize goes to the jaw crusher, then to the top deck where specification sizes are again removed. Oversize from the top deck is sent to the roll crusher for final reduction. This exclusive Bottom Deck Feed feature provides *twice* the effective screen area and thereby increases output. In addition, the operator can easily equalize loads carried by the roll and jaw crusher, *while the plant is operating,* thus always keeping the plant at peak crushing capacity regardless of changes in size of materials. This feature also permits closer gradation control.

For information on PIONEER's new Model 150 PRS Plant and 7 different sized Bottom Deck Feed Plants, write Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (a subsidiary of Poor & Company, Chicago).

Pioneer
Continuflo **EQUIPMENT**

OHIO TURNPIKE *has many uses for* DEMING PUMPS

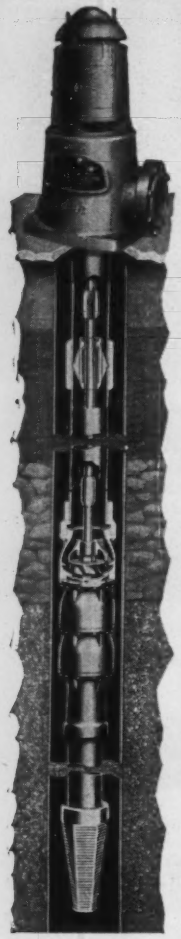


FIG. 4700

• Water mains were beyond reach of road builders constructing the eastern section of the new Ohio Turnpike. Millions of gallons of water were required for the portable concrete mixing plant. Deming Deep Well Turbine Pumps (Fig. 4700) helped solve the problem.

Toll stations (like the one illustrated above) require a daily average of 7,200 gallons per station on a 'round-the-clock schedule. Deming Deep Well Submersible Pumps (Fig. 6720) supply water for drinking, lavatory and maintenance facilities in some of these stations.

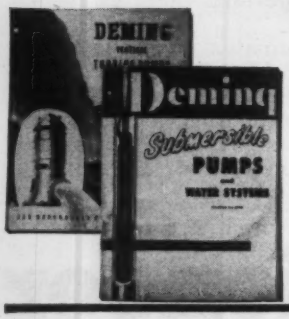
In foundation level basements at certain interchanges, Deming Vertical Sump Pumps protect power cables from run-off rainfall and possible leakage of pipe systems.

When *YOU* face a pumping problem, look to the nearest Deming Distributor for cooperation. The wide variety of types, sizes and capacities of standard Deming Pumps expedites problems of selecting the most efficient pumps for the specific conditions. The locations of Deming Distributors in any area will be furnished promptly upon request.

FIG. 6720

THE DEMING COMPANY

536 Broadway • Salem, Ohio



Send for these Bulletins

Bulletin 4700 (Vertical Turbine Pumps); Bulletin 6710-20 (Submersible Pumps); and Bulletin 4600 A (Sump Pumps) will be sent promptly upon request.

75th ANNIVERSARY DEMING PUMPS 1880 · 1955

LEGAL

resort to some other method. There is evidence that the rock from some parts of the excavation was loosened by the use of iron bars, and if this was practicable as to all of it the jury might well have found that this means should have been adopted. So, also, if less powerful blasts might have been used, would not have occasioned injury, or would have lessened it, the omission to use them might well be considered negligence."[1]

(1) Booth v. Rome, Watertown & O. T. Ry. Co., 140 N.Y. 267, New York Court of Appeals.

Value of Work Performed

A contractor brought an action to recover a balance allegedly due under the contract and also for some extra work performed. There was no dispute as to the balance due under the contract, the only dispute being as to the value of the extra work done.

Three experts testified as to what they would consider to be reasonable charges for the extra work. Their estimates concerning the charges for materials varied from a low of $1,419 to a high of $2,140. The trial court, as to this item, allowed the contractor $1,550 which was sustained on appeal. As to the value of labor, the estimates of the three experts varied from $1,960 to $2,140. The trial court allowed $2,140, the highest of the estimates by the experts. The appellate court[1] reduced the judgment as to this item to $2,000.

While appellate courts as a general rule, are reluctant to set aside a verdict of the judge who tried the case, the appellate court in this case concluded that the trial court was not justified in allowing the contractor the highest estimated value of the labor performed.

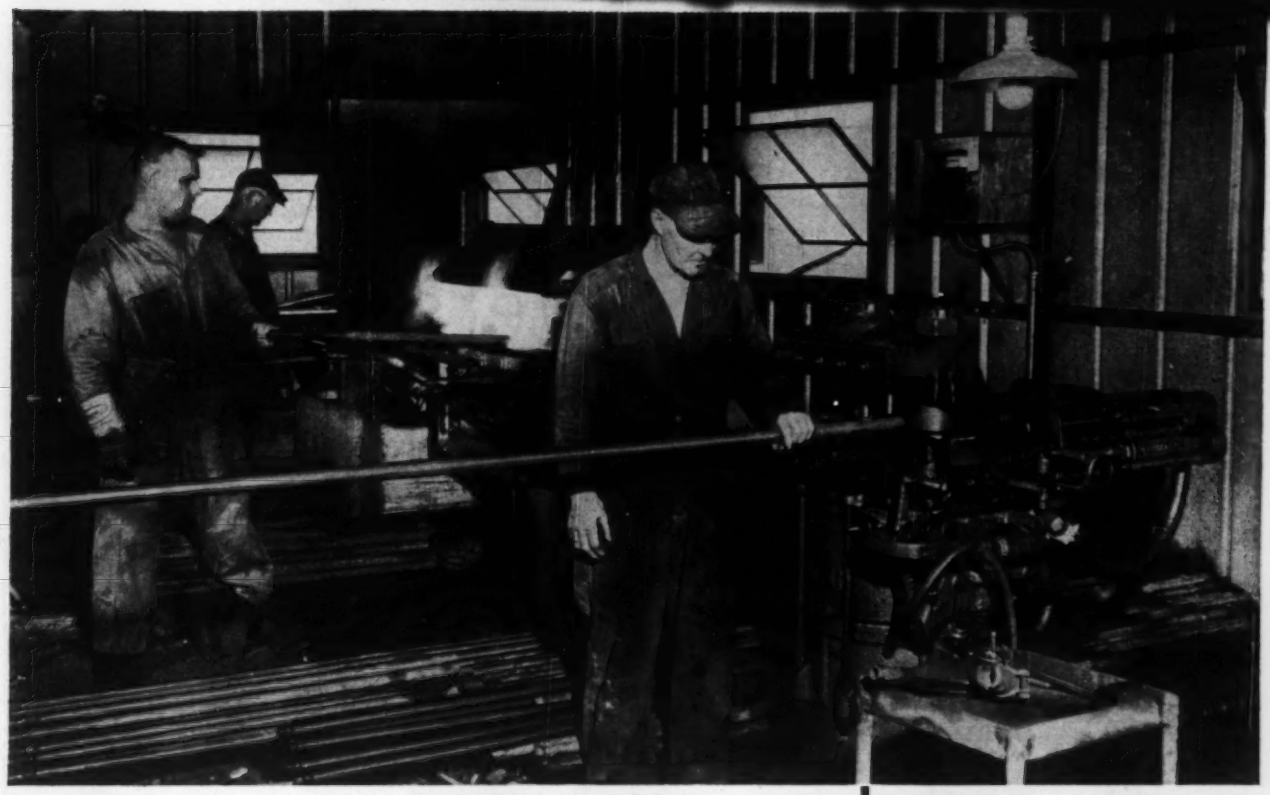
(1) Erwin v. Tri State Plumbing & Heating Corp., 267 S.W. 2d 946, Court of Appeals of Kentucky, June 4, 1954.

Agreement to Subcontract

The mere fact that a contractor, contemplating to submit a bid for a general contract, asks another contractor to submit a bid for doing part of the work and such bid is submitted, does not in itself constitute an agreement to subcontract that part of the work to the other contractor in the event the general contract is awarded to him.[1]

Where however it is agreed in writing that if the general contractor is awarded the contract, he will award the contractor who submits a bid for the performance of part of the work, such agreement will be enforced.[2]

(1) Northeastern Const. Co. v. Town of Hempstead, 121 App. Div. 187, 105 N.Y.S. 581. (2) Northwestern Engineering Co. v. Ellerman et al., 10 N.W. 2d 879.



Blacksmith Billy Watkins shanking a Crucible Hollow Drill Rod.

they're using Crucible Hollow Drill Rods on the Boston Tunnel Jobs . . .

400-feet below the city of Boston, two seven-mile tunnels are being cut through solid rock. Replacing century-old mains, the tunnels will bring water from Quabbin Reservoir, 70 miles away, and remove drainage from the city.

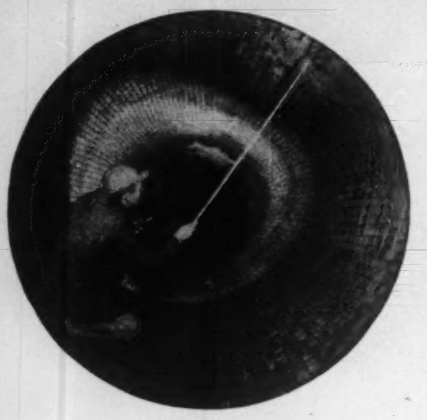
On this job, like most other tough ones, Crucible Hollow Drill Rods are in daily use. For experienced construction men *know* they can depend upon Crucible Hollow Drill Rods for top performance at *lowest cost per foot of hole drilled.*

That's because they are made to *tool steel* standards by the nation's leading producer of *special steels.* So for *extra* dependability on *all* your drilling jobs specify Crucible Hollow Drill Rods. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

120-foot-high head frame used to raise and lower men and materials in excavation shaft. Morrison-Knudsen-Kiewit-Maney City Tunnel Extension Job, Boston, Mass.

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America



Note distorted crown of the old brick sewer.

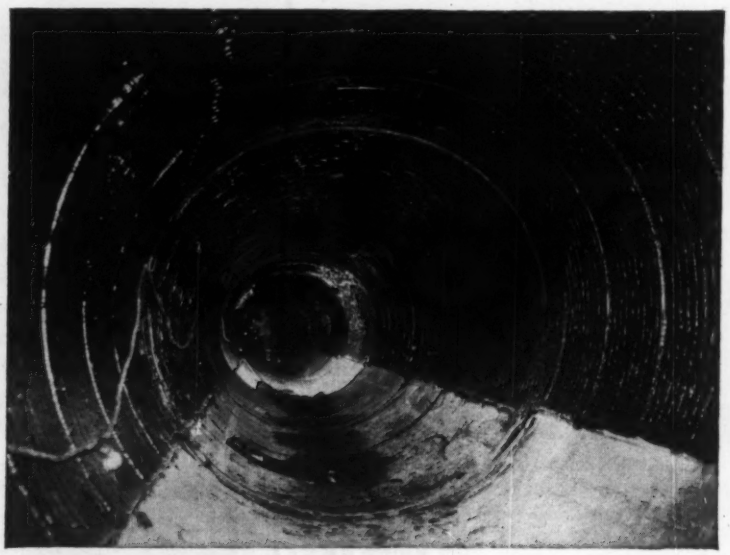
Are Your Sewers Failing?

You won't know unless you look. Failing sewers often keep their secret until it is too late.

In Milwaukee, inspection showed an old 96-inch combined brick sewer was at the point of failure. Various materials were considered for the repair job, but Armco ASBESTOS-BONDED Sewer Pipe was finally selected. It was strong, corrosion-resistant and its installation would not disturb the existing structure or materially reduce the waterway area. The pipe was installed in 8- to 20-foot lengths, reducing the number of joints required. Costs were low.

Armco Corrugated Metal Pipe is also widely used for new sanitary and storm sewers as a safeguard against future trouble and expense. Why not write us today for details? And don't forget about planning an inspection for your present sewer. It may save trouble later on. Armco Drainage & Metal Products, Inc., 3615 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO SEWERS



Armco ASBESTOS-BONDED Corrugated Pipe used for lining Milwaukee sewer. PAVED-INVERT protects against erosion.

BOOKS

All About Plastics

PLASTICS ENGINEERING HANDBOOK—Second Edition, by the Society of the Plastics Industry. 813 pp. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. $10.00.

As a user of plastics, the construction industry will be interested in this manual, which has been completely rewritten to incorporate the numerous developments that have occurred in the plastics industry since 1947, when the first edition was published. The new edition contains 20 chapters on materials, processes for fabricating plastics by letters and numbers in actesting and standards. It was written by 23 committees of the Society of the Plastics Industry.

Of major interest from the consumer's viewpoint is the presentation of a classification system. This identifies plastics by letter and numbers in accordance with their physical properties. The book also contains a chart tabulating types and characteristics of adhesives used to join plastics to each other and to other materials.

As potential designers and builders of structures to be used for manufacturing plastic products, members of the construction industry might find useful the material in this book on equipment and methods for manufacturing plastics.

New Engineering Books

ANALYSIS OF STATICALLY INDETERMINATE STRUCTURES—By Parcel & Moorman, 571 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $9.50

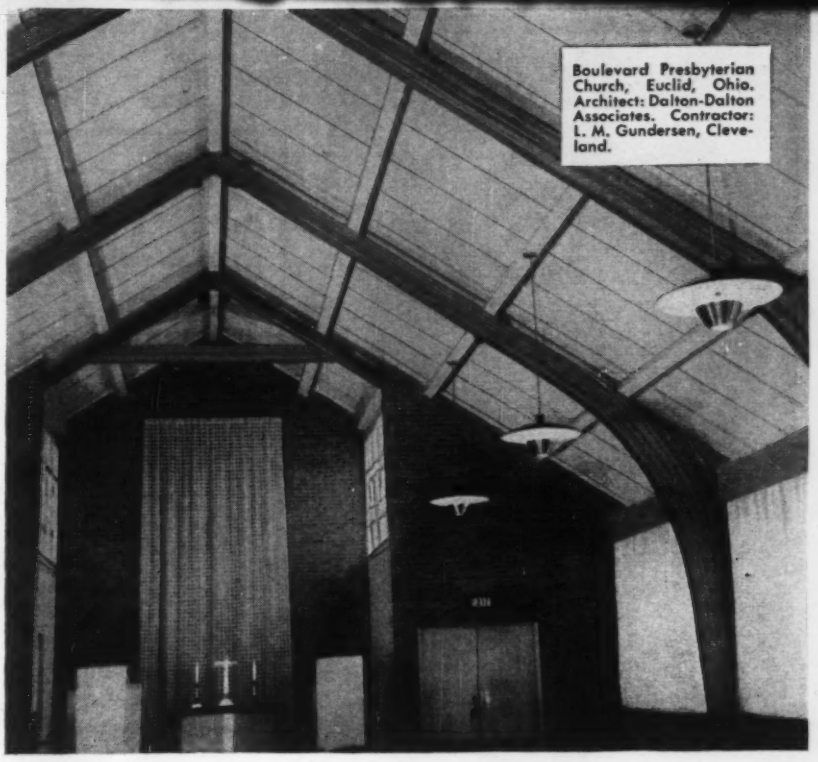
SELECTED PAPERS IN STATISTICS AND PROBABILITY—By Abraham Wald, 702 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $8.00

A GUIDE TO HOSPITAL BUILDING IN ONTARIO—Prepared by the Committee on Designing, Constructing and Equipping of Public Hospitals in Ontario, 307 pp. University of Toronto Press, Toronto 5, Ontario, Canada. $10.00

SIMPLIFIED DESIGN OF STRUCTURAL STEEL—Second Edition. By Harry Parker, 244 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $5.75

ENGLISH-GERMAN TECHNICAL AND ENGINEERING DICTIONARY—By Louis De-Vries, 997 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $20.00

CONSERVING NATURAL RESOURCES—By Shirley W. Allen, 347 pp. McGraw-



perfect atmosphere for worship— Tectum® roof deck

Ⓢ *SEE IT NOW! Ask for 1955 technical data or refer to Section 2e/Te, Sweet's Architectural File.*

Spacious, quiet beauty, the perfect atmosphere for worship, is created at Boulevard Presbyterian Church by wise use of Tectum Roof Deck.

Nine-value Tectum deck, the underside spray-painted to specification, blends attractively with soothing pastel sidewalls and rich natural wood arches in this modern interior. Tectum lets churchgoers enjoy clarity of sound and the comfort of all-season insulation.

Surely, Tectum stretched the building fund. It will keep maintenance costs down due to greater stability than most building materials plus its inherent resistance to termites, fungus, and rot. Noncombustible Tectum affords high structural load capacities, yet weighs only about two lbs. per board foot. Eleven stock sizes and four thicknesses are available in this easily worked, quickly erected roof decking material.

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The Alliance Manufacturing Company
NEWARK, OHIO

TECTUM DIV.
130 South Sixth Street, Newark, Ohio

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Address _____

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In purchasing this 100 ton transformer The Consumer Power Company of Flint, Michigan, showed faith in the Westinghouse slogan "You Can Be SURE If Its Westinghouse."

In placing a large percentage of this load on one of their Rogers Trailers, P. Van Harren & Sons of Bay City, Michigan, again displayed their faith in the rugged dependability and braking reliability of these trailers.

This transformer, the heaviest load ever moved over Flint Streets, measured 20′ x 15′ x 10′. The move was made under the supervision of Venus and Russell Van Harren with Jacob Smith as rigger foreman.

You, too, can place the utmost confidence in Rogers Trailers, regardless of the type needed or the difficult nature of the loads it will be required to haul.

135 ORCHARD ST.

YOU GET MORE FOR YOUR MONEY IN A ROGERS TRAILER

EXPERIENCE builds 'em

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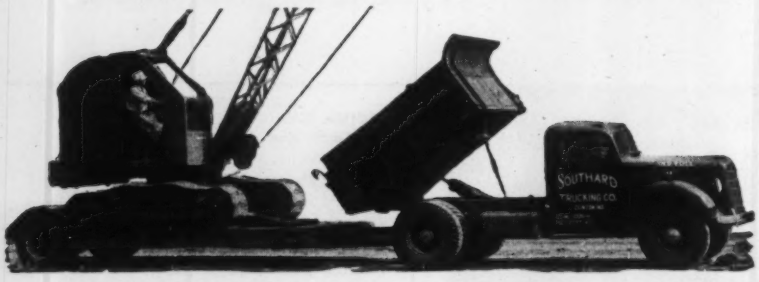

Attaching of loaded Rogers Tagalong trailer

BOOKS

Hill Book Co., 330 W. 42nd St., New York 36, N.Y. $5.50

BUILDING MATERIALS: THEIR ELASTICITY AND INELASTICITY—By M. Reiner, 560 pp. Interscience Publisher, Inc., 250 Fifth Ave., New York 1, N.Y. $12.25

FLUORDINATION AS A PUBLIC HEALTH MEASURE—By James H. Shaw, 232 pp. American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C. $4.50

DIESEL ENGINE OPERATION AND MAINTENANCE—By Vladimir L. Maleev, 504 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N.Y. $6.50

PRESTRESSED CONCRETE—Third Edition. By Gustave Magnel, 345 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N.Y. $8.00

RADIANT HEATING—Second Edition. By Richard W. Shoemaker, 346 pp. McGraw-Hill Book Co., 330 W. 42nd St., N.Y. 36, N.Y. $7.00

1954 SUPPLEMENT TO BOOK OF ASTM STANDARDS, Part 1, Ferrous Metals—591 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Reports & Pamphlets

EFFECT OF CURING CONDITION ON COMPRESSIVE STRENGTH OF CONCRETE TEST SPECIMENS—Circular No. 59, National Sand and Gravel Association, 1325 E Street, N.W., Washington 4, D.C.

SPECIFICATIONS AND TEST METHODS FOR READY-MIXED CONCRETE—Second Edition. Publication No. 47, National Ready Mixed Concrete Association, 1325 E St., Washington 4, D.C.

FURTHER PAPERS OF THE WISCONSIN LOESS OF SOUTHWESTERN IOWA 1953-1954, Engineering Report No. 22, Iowa State College, Ames, Iowa.

THE HIGHWAY TRANSPORTATION STORY—Second Edition. Published by National Highway Users Conference, National Press Bldg., Washington 4, D.C.

EFFECTIVENESS OF UNDERLAYMENT NAILS—Virginia Polytechnic Institute Wood Research Laboratory, Blacksburg, Va.

REVISIONS TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS—Approved by American Association of State Highway Officials, Institute of Traffic Engineers, National Committee on Uniform Traffic Laws and Ordinances. Compiled by the Bureau of Public Roads and obtainable from Superintendent of Documents, Washington, D.C. 15¢.

LAWS RELATIVE TO THE CONTROL OF ATMOSPHERIC POLLUTION, Department of Public Health, Division of Sanitary Engineering, The Commonwealth of Massachusetts, Boston, Mass.

(*Continued on page 88*)

"I was promised delivery today,

but now I'm told you've no stock of one rope and only half enough of another. This delay is costing me money and plenty of it. From now on it's Roebling for me!"

* * *

You can count on prompt and full delivery of Roebling wire rope. Your nearest Roebling office and distributor will help you choose the rope that will perform and stand up best in excavating and construction service. And you'll get what you want, when you want it — straight from nearby warehouse stock.

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There's one way to be sure when you specify plywood for form work . . .
LOOK FOR THE DFPA* TRADEMARK!
DFPA TESTED QUALITY
When you specify grade-trademarked fir plywood, you're sure of material manufactured under the rigid industry quality control program and independently quality-tested by DFPA* to protect the buyer. Here are grades expressly made for form work:
1. INTERIOR PLYFORM — made with highly moisture resistant glue for multiple concrete form re-use.
2. EXTERIOR PLYFORM — made with waterproof glue for maximum form re-use.
3. OVERLAID PLYWOOD — glossy, smooth, tough resin-fiber surface fused to Exterior plywood. Gives greatest re-use plus smoothest concrete. EXT-DFPA* on panel means 100% waterproof glue.
EXT-DFPA
*DFPA — Douglas Fir Plywood Association, Tacoma, Wash. is a non-profit industry organization devoted to product research, promotion and quality maintenance.

BOOKS

WATER QUALITY CRITERIA, ADDENDUM No. 1, State Water Pollution Control Board, Room 610, 721 Capitol Ave., Sacramento 14, Calif.

DENSITY OF SEA WATER AT TIDE STATIONS, PACIFIC COAST, NORTH AND SOUTH AMERICA AND PACIFIC OCEAN ISLANDS—Special Publication No. 281, U. S. Department of Commerce, Coast and Geodetic Survey. Obtainable from Superintendent of Documents, Washington 25, D. C. 40¢.

POZZOLANAS: BEHAVIOUR OF POZZOLANA-LIME MORTARS OF LOW WATER-CEMENT RATIO WITH PARTICULAR REFERENCE TO THE PROBLEM OF ASSESSING POZZOLANIC REACTIVITY—Reprinted for the Commonwealth Scientific and Industrial Research Organization, Box 4331, GPO, Melbourne, Australia.

THE RELATIONSHIP BETWEEN GOOD TRAFFIC LAWS AND SAFE MOTORING—A report by the Indiana Legislative Study Commission on Traffic Safety, Automotive Safety Foundation, 200 Ring Bldg., Washington 6, D. C.

WATER IN KANSAS: 1955—A report to the Kansas State Legislature by the Kansas Water Resources Fact-Finding and Research Committee, Room 223, Lindley Hall, Kansas University, Lawrence, Kan.

WATER POLLUTION STUDY OF MAHONING RIVER BASIN—Water Pollution Control Unit, Sanitary Engineering Division, Ohio Department of Health, Columbus, Ohio.

A STUDY ON BOND PROTECTION FOR THE SUPPLIER IN THE CONSTRUCTION INDUSTRY—Credit Research Foundation, 229 Fourth Ave., New York 3, N. Y.

THE NEW ATOMIC ENERGY LAW: WHAT IT MEANS TO INDUSTRY—Atomic Industrial Forum, Inc., 260 Madison Ave., New York 16, N. Y. $5.00.

NEW TECHNICAL MEMORANDUMS of the Beach Erosion Board, Office of the Chief of Engineers, Washington 25, D. C. are as follows: No. 41, Laboratory Study of Equilibrium Profiles of Beaches; No. 46, Field Investigation of Wave Energy Loss in Shallow Water Ocean Waves; No. 50, Statistical Significance of Beach Sampling Methods; No. 51, Generation of Wind Waves over a Shallow Bottom; No. 52, Laboratory Study of Effect of Tidal Action on Wave-Formed Beach Profiles; No. 53, Laboratory Study of Effect of Varying Wave Periods on Beach Profiles; No. 62, Restudy of Test-Shore Nourishment by Offshore Deposition of Sand Long Branch, New Jersey; No. 69, Wave Forces on Piles: A Diffraction Theory; No. 70, The Effect of Fetch Width on Wave Generation.

ELIMINATING STREAM POLLUTION FOR A GREATER AMERICA

LOOKING DOWN vertical shaft to tunnel driven 33 feet under six-lane highway. Unaffected by weather conditions, men work around the clock in tunnel headings. Steel plates line shaft and tunnels, protecting men against cave-in.

MINING IN TUNNEL progresses close to pay line. When 4 square feet of ground is exposed, man bolts next plate into ring.

How COMMERCIAL tunnel liner plates are a time and money saving answer in soft ground tunnel construction. . .

REMOVING MUCK from heading places additional load of 1500 pounds on monorail system suspended from steel liner plate lining.

RAPID PROGRESS is being made in driving 8400 feet of tunnel at depths as low as 33 feet below the surface by Mountain State Construction Company for the Sanitary Board of the City of Charleston, W. Va. Tunnels 84″ and 68¾″ in diameter, when completed later this year, will become part of the project that will intercept and pick up existing sewage lines now dumping into the Kanawha and Elk Rivers and divert the flow of all raw sewage to a new disposal plant now under construction.

Several major problems were overcome when consulting engineers decided, and the contractor agreed, that the steel tunnel liner plate system was the ideal method to use in driving these tunnels. I.V. Cunningham, Owner of Mountain State, says that he is using 2,000,000 pounds of COMMERCIAL steel liner plates because simplicity of the COMMERCIAL system makes rapid progress possible even though tunnels are being driven close to the river in wet ground where cave-ins are a constant hazard and beneath Kanawha Boulevard where traffic continues uninterrupted on one of Charleston's busiest arteries.

CHECKING ALIGNMENT, Vernon Cunningham says, "Once the first few feet of tunnel liner plates are in place, the remaining rings are practically self-aligning." LA-14

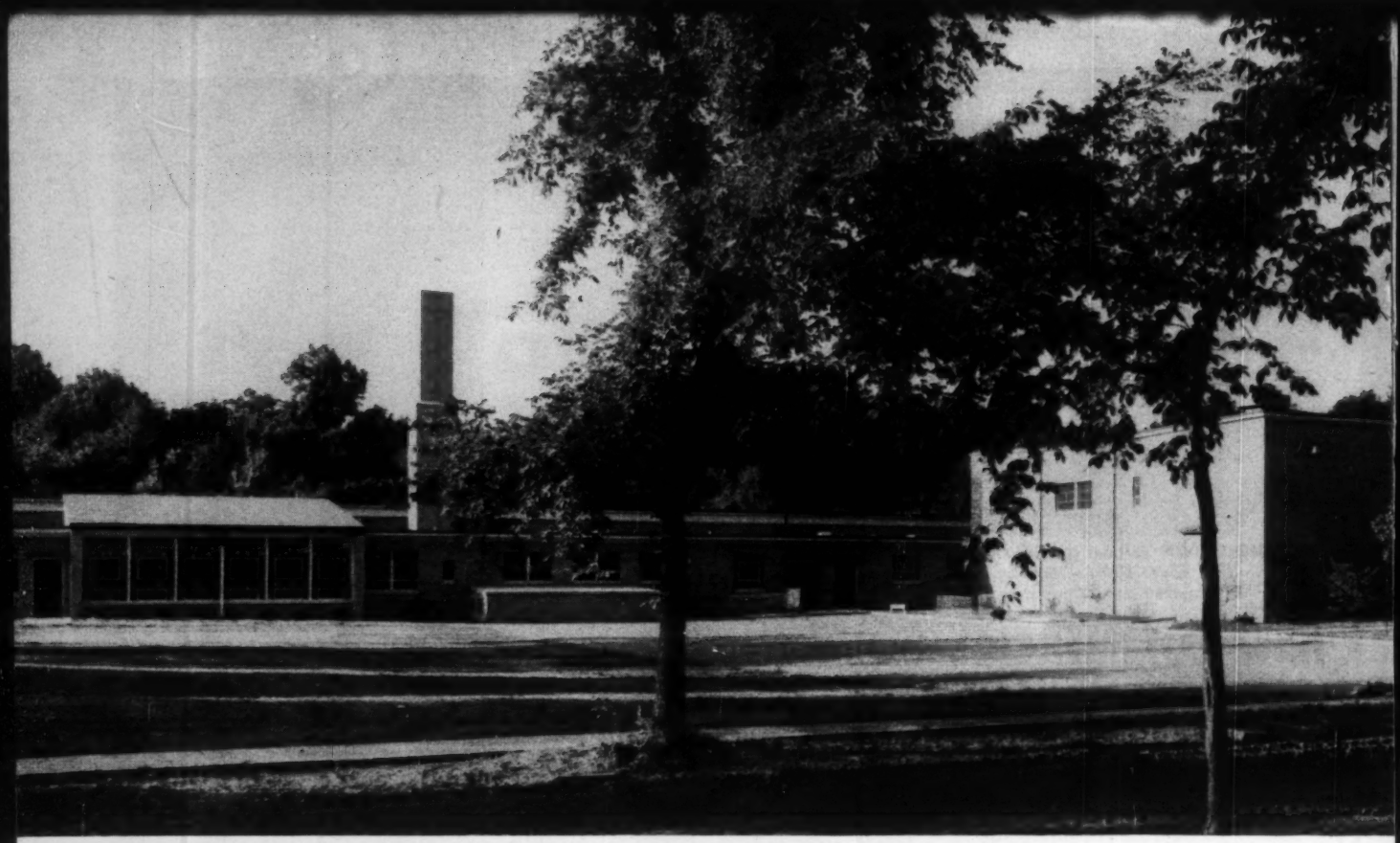
Setting the proper ground support quickly as mining progresses in the heading of a soft ground tunnel is of utmost importance. COMMERCIAL liner plates are curved to the exact required radius and because of their size, weight and design, one man can easily and quickly set them into place. Bolts are slipped through matching holes punched in the four inside flanges of the plates and nuts tighten up quickly with the use of only a spud wrench. There is nothing awkward in bolting the COMMERCIAL plate into place because everything is out in the open and you see just what you are doing.

Starting this contract with unskilled workmen, Mountain State has found that it worked out perfectly to let their men learn the COMMERCIAL liner plate system on the job, and in short order the crews performed as teams. With actual physical labor reduced to a minimum and the fear of cave-in hazards negated, Vernon Cunningham says, "They are happier workers than any I have seen in all my years in the construction business. This, of course, pays off in results. For my own part, I have found the COMMERCIAL liners a time and money saving answer to a difficult construction problem."

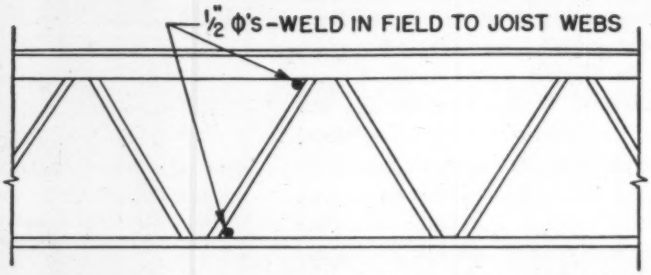
Can we be of assistance to you on your next tunnel job? There's no obligation.

THE COMMERCIAL SHEARING AND STAMPING COMPANY
Youngstown, Ohio Chicago, Illinois Salt Lake City, Utah

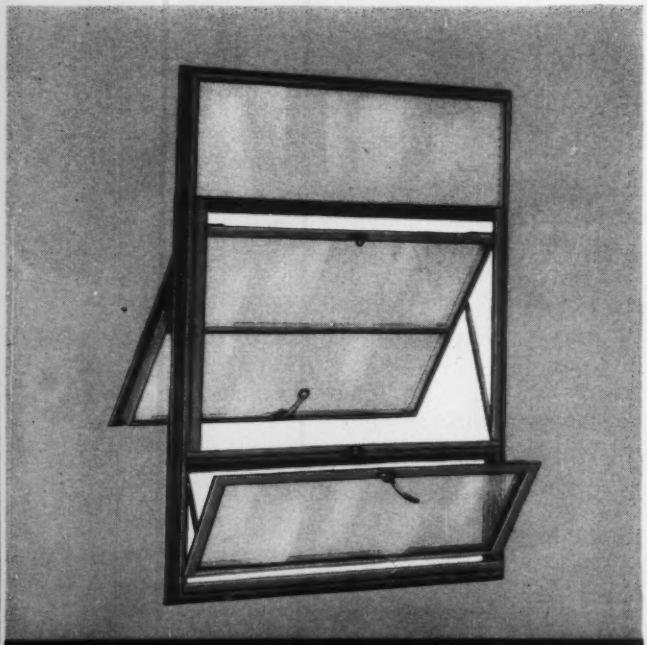
COMMERCIAL
shearing and stamping



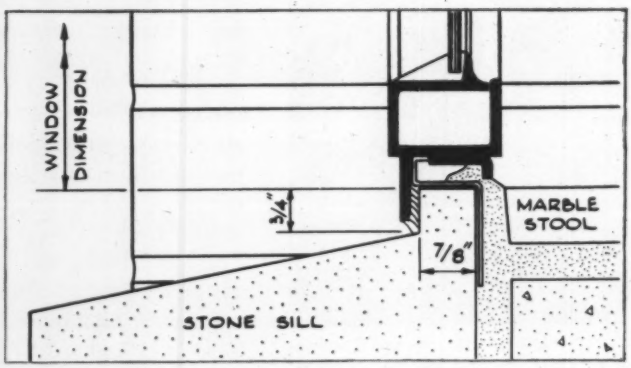
Front view of Normandy Road School, Bay Village, Ohio. Architects: Mellenbrook, Foley & Scott. Contractor: J. L. Hunting Company.



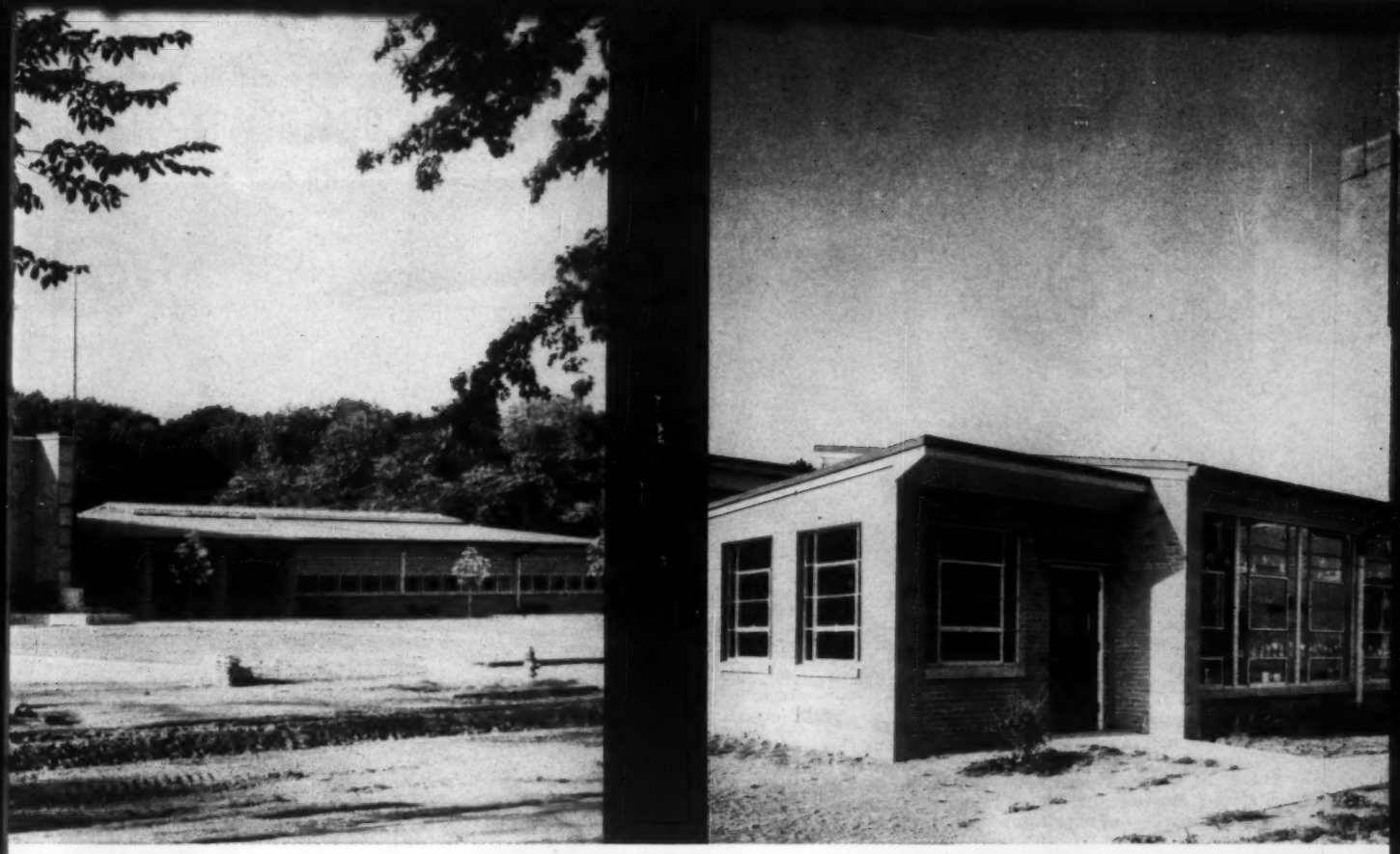
This ½" round horizontal bridging is recommended by the Steel Joist Institute, with ½" round bars bridging both top and bottom chords.



Ceco Architectural Projected Windows also contributed toward an economical, functional building. Their solid hot rolled sections provide easy wall bearing anchorage... strength... flexibility of ventilation... plus beauty and good daylighting.



This sill detail, with the window frame overlapping the stone sill and the joint properly caulked, provides efficient watertightness and drainage. Another school-wise feature is the marble stool.



Close-up detail of Normandy Road School. Note the variations in window use.

How a school for 400 students was built on a limited budget . . .

ARCHITECTS CUT FRAMING COSTS 15% WITH CECO STEEL JOISTS

It takes more than ingenuity to meet building budget problems . . . knowledge of workable short cuts is important here. So Architects Mellenbrook, Foley & Scott drew deeply on experience in designing the Normandy Road School, Bay Village, Ohio. The problem was to accommodate a set number of students—with a limited budget. Ceco Steel Joist Construction contributed to the solution by saving 15% over other floor and roof framing methods. It is the lightest of all fire-safe constructions and is easiest and fastest to erect. Ceco *Standard* Steel Joists were used effectively in classroom, office and corridor areas—bays being from 9′ 9⅝″ to 27′ 4½″ wide. Extended ends provided low-cost sunshade overhangs, cantilevered over the window areas. Ceco *Longspan* Steel Joists with nailer strips simplified framing of gymnasium areas. At least a month's time was saved because steel joists are erected faster than heavier framing. All Ceco deliveries were timed to meet the schedules of the contractor. Here is another example of Ceco performing on the architect-contractor-supplier team to help meet a building need. Next time, call on Ceco Product Specialists. They will assist you in planning and saving.

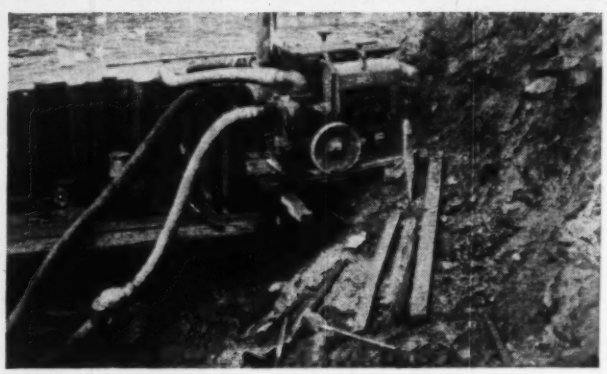
CECO STEEL

CECO STEEL PRODUCTS CORPORATION
Offices, warehouses and fabricating plants in principal cities
General Offices, 5601 W. 26th Street, Chicago 50, Illinois

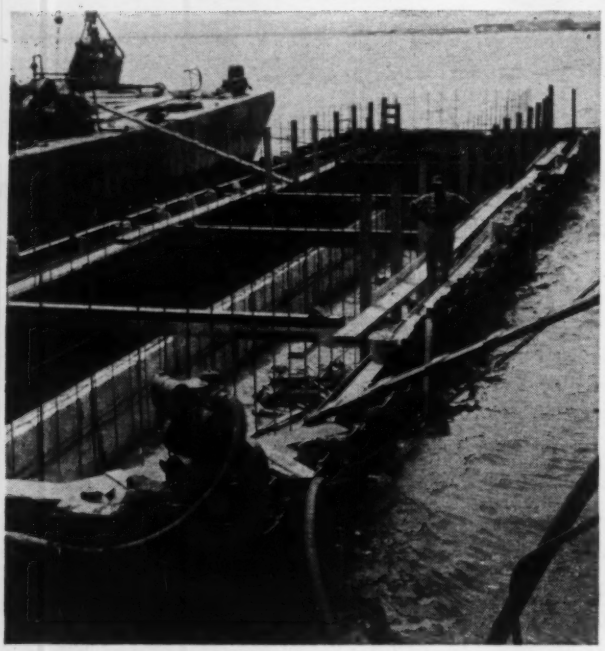
IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

Jaegers prime faster, pull stronger, pump longer

SLOW PUMP SPEED HANDLES FAST WATER — Latrobe Construction Co., had to pave the slope of Loyalhanna Creek with 8" thick concrete 25' wide (equivalent to highway slab) when relocating U.S. 30, western Pennsylvania. This Jaeger 6P pump handled 1500 gpm of inflow at a speed of 1450 rpm. Ordinary 6" pumps, with smaller shells and impellers, require up to 1750 or 1800 rpm.



JAEGER PUMPS MAKE WET JOBS DRY — Two 4" and three 6" Jaegers were used to dewater the main pier cofferdam on this Milwaukee River bridge. Conservatively rated, they have capacity to dewater fast and sure-priming ability to keep jobs dry.



NEVER RACES TO PRIME — There's reason why this Jaeger 3P pump is being used to control seepage in this tremie sealed cofferdam on Frederick Snare Co.'s Raritan River Bridge job, N. J. Wherever priming is a problem, Jaeger's combination of inherent and jet priming actions, greater priming water capacity and ability to prime without racing the engine are valuable advantages.

PUMPS ALL THE WATER A 2" HOSE CAN HANDLE — This Jaeger hi-performance 2" pump delivers its full rated capacity of 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps). 28" vacuum at the intake flange is not unusual. Weighs only 180 lbs., measures only 24" x 21" x 26" high, as shown. On base, weighs only 160 lbs.

For complete information on Jaeger pumps from 1½" to 10" in size, see your Jaeger distributor or send for Catalog P-4.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • LOADERS • TRUCK MIXERS • CONCRETE MIXERS • PAVING MACHINES

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
April Materials, and Labor Prices, will appear in April 7, 1955 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel, 1½ in.	Gravel, ¾ in.	Sand	CRUSHED STONE Per ton, carload lots 1½ in.	¾ in.	CRUSHED SLAG Per ton, carload lots, f.o.b. plant 1½ in.	¾ in.	CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.: per block Sand grav.	Lt. wgt. agg.	CONCRETE Ready Mixed 1:2:4; over. 50 c.y., del.
	Paper	Bulk	Mortar										
Atlanta	$3.87a	$3.56a	$3.40	$2.075	$2.075	$2.50‡	$2.14	$2.24	$1.45	$1.65	$0.18	$0.195	$12.25g
Baltimore	4.06a	3.75a	3.53	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.18	.18a	12.15
Birmingham	3.62	2.75e	....	2.53n	2.53n	2.08n	2.75	2.75	1.35	1.55	.165	.165	11.00
Boston	4.37b	4.11b	3.96	2.50a	2.50a	2.50a	1.50a	1.60a	.....	.....	.215	.245a	12.50h
Chicago	3.63a	3.32a	3.35	3.25‡b	3.25‡b	3.65‡b	3.50‡b	3.50‡b	2.25‡	2.25‡	.23	.23b	12.50r
Cincinnati	3.85c	3.55c	3.63	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	.....	.....	.18	.225a	11.45r
Cleveland	N. A. in C. L.	3.34e	....	2.05sf	1.85f	1.65	4.10‡a	4.10‡a	3.35‡	3.15‡	.....	.22	14.40d
Dallas	3.15a	2.85a	2.93	2.18	2.28	1.84	2.22	2.38	.....	.....	.11e	.267h	9.40
Denver	4.24a	3.94a	4.24	1.85	2.00	1.20	....	....	.....	.....	.23	.255a	10.50
Detroit	3.72a	3.17a	3.50	4.50‡b	4.50‡b	4.00‡b	3.75‡	3.75‡	4.25‡	4.25‡	.21	.21a	12.70
Kansas City	4.00b	3.80b	3.80	1.85‡	1.85‡	1.85‡a	2.00‡a	2.00‡a	.....	.....	.20a	.22-	12.75bt
Los Angeles	4.72ch	4.26ch	5.20	2.21a	2.41a	2.21a	2.16a	2.26a	.....	.....	.135fm	.245m	11.88lh
Minneapolis	4.10a	3.79a	3.71	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	.....	.....	.19i	.....	13.25fv
Montreal	3.11d	2.86d	....	2.20a	2.20a	2.25a	1.90i	2.20i	.....	.....	.17	.17a	10.80ab
New Orleans	3.50a	3.20a	3.48	2.44	2.44	2.00	....	....	1.45	1.65	.275	.....	12.90
New York	4.16a	3.85a	3.53	2.85bk	2.85bk	1.90bk	2.70bl	2.70bl	.....	.....	.....	.....	14.65am
Philadelphia	3.73/4.12‡a	3.42/3.79‡a	3.58/3.63‡	2.75‡rp	2.75‡rp	2.15‡rp	2.30‡	2.40‡	2.00	1.90	.22/.26	.....	13.20dv
Pittsburgh	3.62a	3.34a	3.62	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.28	13.00
St. Louis	3.60/3.83c	3.25/3.51c	3.45/3.62	3.10am	2.90am	2.30/2.90am	1.60j	1.70j	1.50	1.50	.22	.28ci	12.25e
San Francisco	3.83c	3.39c	....	2.07	2.07	2.17	2.22	2.22	.....	.....	.....	.28cl	12.15c
Seattle	4.80a	3.55a	5.95k	3.50‡bm	3.50‡bm	3.50‡bm	4.00‡bm	4.00‡bm	.....	.....	.225t	.315t	12.30f

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Less 10¢ disc, 15 days. *b* Less 2% disc, 15 days. *c* Less 10¢ disc. 10 days. *d* Truckload lots, deliv. 10¢ disc, 20 days. *e* Truckload lots, destination price. *h* LCL.
SAND GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash Less 1% for cash. *l* F.o.b. plant San Rafael. *m* F.o.b. yard
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cy. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *g* Less 25¢ disc, 15 days. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Federal tax included. Add 5% mun. & prov. *l* 1:2½:3. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 3-mi zone. *r* Includes 50¢ heating charge. *t* Includes 25¢ heating charge. *u* Includes 35¢ heating charge.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.90†	Buffington, Ind	$2.85†	Steelton, Minn	$2.95†	Muskegon, Mich	$3.00†	Toledo, O	$2.90†
Clinchfield, Ga	2.90†	Independence, Kan	2.80†	Leeds, Ala	2.75†	Saginaw, Mich	2.90†	Milwaukee, Wis	3.05†
Kingsport, Tenn	2.90†	Hannibal, Mo	2.85†	Duluth, Minn	2.95†	Wyandotte, Mich	2.90†	Green Bay, Wis	3.05†
West Des Moines, Iowa	2.95†	Northampton, Pa	2.90†	Hudson, N. Y	2.75†	Buffalo, N. Y	3.00†	Ironton, O	2.90†
Nazareth, Pa	2.90†	Universal, Pa	2.95†	Alpena, Mich	2.80†	Oswego, N. Y	3.15†	Montreal City	2.58
Bath, Pa	2.90†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich	2.90†	Cleveland, O	2.95†	W. Winfield, Pa	3.00†

† *Prices to hold for first quarter of* 1955.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT MC Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION RSI Per gal. Tank car	Drums
Atlanta	.....	.....	.....	$26.00	$33.25	$0.15	$0.27	$0.17w	$0.30w	$0.15	$0.15	$0.25
Baltimore	150.00‡	75.00‡	.....	21.00i	.....	.085i	0.175i	.09iw	.18iw	.09i	.095i	0.185i
Birmingham	.....	55.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00a	23.00a	22.00av	22.00av	.09x	.....	.10a	.145aG	.22aG
Chicago	155.00‡	85.00‡b	3.45/3.55‡f	19.85b	29.85b	18.85bv	28.85bv	.094bw	.1740bw	.0725b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	73.00d	5.03g	23.00A	.....	23.00A	.....	.1025Aw	.....	.....	.1025AG	.18AG
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	28.91	50.44	.098	.1087	.1960
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21v	.....	.1188wI	.....	.0792	.....	.211
Kansas City	e	e	e	15.00cl	.....	17.50e	.....	.07wJ	.....	.055c	0.11	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dex	.....	18.00dxK	.....	17.00dv	.0825f	.1725f
Minneapolis	.....	.....	2.97h	23.70	.....	23.70	.....	0.10w		0.10	.....	.....
Montreal	.....	e	e	27.00n	39.60n	.135n	.198n	16.50nuS	20.90nuS	.132n	.197ns	.289ns
New Orleans	.....	.....	.....	17.50e	....o	17.50ew	....o	.085ew	....o	.0825S	.0825SL	....e
New York	.....	.....	2.75f	23.89qCD	44.32qD	22.89wtCD	43.57wtD	.1023wCDF	.1889wDF	.....	.1023CD	.1918D
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.09uF	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.224
St. Louis	.....	.....	.....	18.55f	.....	.1713	.....	.0865wM	.....	0.155	.10	.....
San Francisco	.....	55.00e	.....	17.50g	33.00gp	17.50gkv	33.00gkv	20.00gN	37.50gN	18.75v	.085y	.....
Seattle	.....	.....	.....	17.50A	38.00A	17.25hv	.....	24.50K	.....	19.75hv	.085A	.095w

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3 x 4 x 8. *c* 2¼ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3" *h* 2" tr; 8# 3# treat. *i* 3 x 3½ x 8½. *j* 2½". 6lb. tr.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40/80 penetr. *n* Tax incl. *o* Drums not avail. Shipped in steel bbl. *q* 40/85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85/200 penetr. *u* Per 100 gal. *v* Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. *A* F.o.b. refinery, Cleveland. *B* F.o.b. Destrehan, La. *C* Bulk. *D* Prices based on transporting to Manhattan via truck. *E* RC. *F* Also RC. *G* Also MS, SS. *H* RC 0-5 incl. *I* MC 4. *J* MC, RC .0675. *K* MC 3, 4 & 5. *L* MS. *M* MC 1-5, RC 1-5, .089. *N* MC 3.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING	STEEL RAILS Per Net Ton			TRACK SUPPLIES			
						Standard	Light	Re-rolled	Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.25	$4.225	$4.30	$9.25	....	$89.00	$107.00	Not	$5.425	$7.30	$5.275	....
Chicago Area	4.25	4.225	4.30	9.25	$5.075	89.00	107.00	avail-	5.425	7.30	5.275	....
Pittsburgh Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	able	5.425	7.30	5.275	$11.50
Buffalo Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	....	5.425	7.30	5.275	11.50
Cleveland	....	....	4.30	9.25	5.075	.....	.....	....	....	....	....	11.50
Youngstown Area	....	....	4.30	....	....	.....	.....	....	....	7.30	....	....
Geneva	4.25	4.225	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	5.075	.....	.....	....	....	7.30	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	95.00	....	5.425	7.30	5.275	11.50

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price: 5 tons to carload lot New billet	Rail steel	EXPANDED METAL LATH*k* Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots fob mill
Atlanta	$7.08	$7.22	$7.22	$38.00‡	$42.00‡	
Baltimore	7.02	7.06*j*		42.00	45.00	
Birmingham	6.65	6.50*t*	6.50*t*	51.00*p*	57.00*p*	
Boston	7.49*s*	7.37	7.37	42.00	46.00	
Chicago	6.69	5.78*gu*	5.78*gu*	46.00‡	56.00‡	
Cincinnati	7.06*ak*	7.06*re*	....	39.00*mn*	43.00*mn*	
Cleveland	7.02	5.76*c*	....	39.00‡	43.00‡	
Dallas	9.05	7.25	7.25	49.00	52.00	
Denver	8.15	7.20*c*	....	48.00*n*	63.00*mn*	
Detroit	7.16	6.93*w*	....	50.50	60.50	
Kansas City	7.36*a*	7.18	....	43.50	47.50	
Los Angeles	7.55*fd*	7.05	....	52.00	58.00	
Minneapolis	7.05*d*	7.68*b*	7.68*b*	37.00	41.00	
Montreal	7.50–8.00*i*[C]/8.50–9.20*i*[A]	6.65*i*	6.65*i*	46.00*h*	51.00*h*	
New Orleans	....	6.20*akz*	....	66.00	60.00	
New York	7.48	6.85*yaa*	6.85*yaa*	42.00*mn*	48.00*mn*	
Philadelphia	6.42	6.67	....	38.00‡	42.00‡	
Pittsburgh	6.69	6.92*z*	6.55	37.60	39.60	
St. Louis	7.09*e*	6.30*c*	6.30*c*	55.00*l*	56.00*l*	
San Francisco	7.50	6.85*j*	....	41.50	47.50	
Seattle	5.00*e*	6.55*ci*	....	51.00*w*	57.00*w*	

Quantity extras, per cwt: under 100 lb., +$6; 100–399 lb., +$3; 400–999 lb., +1.25; 1000–1999 lb., +30¢; 2000–4999 lb. base price; 5000–9999 lb., −10¢; 10,000–19,999 lb., −30¢; 20,000–29,999 lb., −50¢; 30,000 lb and up, −70¢

EXTRAS, per cwt—*Quantity: less than 700 lb., +50¢; 700–1499 lb., +25¢; 1500–7999 lb., +10¢. *Size†: #2 +$2.20; #3 +$1.10; #4 +80¢; #5 +62.5¢; #6, #7 +45¢; #8, #9, #10 +30¢. *Bending: heavy, +80¢; light, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job). *Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–500 tons, +50¢ but not over $4500; 20–200 tons, +60¢ but not over $2240; under 5 tons, +85¢ but not over $70. *Design only: +60¢

‡ Delivered *a 2000–9999 lb. *b 10,000–15,999 lb., fob city *c 20 tons or over *d 10,000–19,999 lb. *e fob plant *f incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more *q 4 lb per sq. yd. *r 2% off for cash *s 2,000–4,999 lb *t add 15¢ del. *u add 6.25¢ switch *v incl 15¢ del. *w 20 tons *x add 5¢ switch *y add 30¢ del. *z add 10¢ del. *aa Prices beginning Aug. 1 based on Morrisville, Pa.; previously based on Sparrow Pt., Md. Decrease in freight costs due to switch in mill base offset mill price rise July '54. *A American made. *C Canadian made. † Number system replaces inch system of classifying bar sizes. New system is based on number of eighth inches in diameter of bar.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.*a*	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	14.82	$12.925	.....	.....	$0.90*m*	$3.40*m*
Baltimore	121.50	1.45	2.42	.546	1.053	4 275*s*	11.3775	$178.20	$274.80	95	2.60
Birmingham	103.00	1.45	2.42	.42	.75	3.30*v*	10.50*v*	250.00‡	400.00‡	1.25*m*	2.75*m*
Boston	122.00	1.47	2.20	.581*grt*	1.205*grt*	4 545*grt*	12.00*grt*	187.80*r*	289.20*r*	1.54*mg*	3.65*mg*
Chicago	107.00	1.45	2.20	.70*m*	1.35*m*	5 62*m*	13.50*m*	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.47	2.29	.609*t*	1.1745*t*	4 82*t*	12.61*t*	225.00	350.00	.80*m*	2.95*m*
Cleveland	108.00	1.47	2.29	.49*u*	.945*u*	3.96*t*	10.66*t*	158.00*m*	245.65*m*	.85*m*	3.25*m*
Dallas	112.00	1.47	2.54	.439	.799	4.00*b*	9.17*b*	.....	.....	.49	1.80
Denver	115.00	1.53	2.54	.45*n*	.78*n*	3.48*n*	....	.....	.....	.74*m*	2.50*m*
Detroit	108.00	1.47	2.29	.75	1.45	5 75	15 50	230.00*m*	350.00*m*	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	4 13	11 20	250.00	480.00	.80	3.25*g*
Los Angeles	130.00*x*	1.53	2.20	.67*l*	1.46*l*	5.97*l*	14.89*l*	228.20*l*	348.90*l*	.95	2.75*f*
Minneapolis*w*	112.00	1.49	2.42	.75*mo*	1.36*mo*	5.60*mo*	....	.....	.....	1.38*h*	4.05*h*
Montreal	110.00	....	....	1.07*u*	1.73*u*	5.52*u*	8.93*u*	.....	.....	1.17*h*	3.11*j*
New Orleans	101.50	1.45	2.42	.483	.875	4.69	....	280.00*p*	460.00*p*	.65	2.29
New York	111.35	1.47	2.20	.68	1.30	5 12	13 50	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95*r*	12 65*r*	300.00‡	350.00‡	1.60*h*	3.95*h*
Pittsburgh	110.00	1.47	2.20	.468*m*	.864*m*	3.86*m*	9.78*m*	152.00	244.00	1.05*h*	2.50*h*
St. Louis	112.00	1.45	2.29	.56	1.03	4 22	9 80	180.00*l*	380.00*l*	1.20*il*	2.70*il*
San Francisco	127.00	1.53	2.20	.61*d*	1.41*d*	5.78*d*	14.32*d*	235.00*l*	392.00*l*	1.05*m*	3.30*n*
Seattle	138.73	1.54	2.20	.51*b*	.91*b*	....	....	150.00*e*	.....	.85*k*	2.75*k*

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

	3½ to 6 in. Lap Weld† Galv %	Black %	2½ & 3 in. Butt Weld† Galv %	Black %
Mill: Lorain, Ohio	10.25*j*	25.50*j*	17.00	34.25
Aliquippa, Pa	2.75	20.50*a*	17.00	34.25
Sparrows Pt., Md			15.00	32.25
Benwood, W. Va	6.50*t*	24.25*t*	17.00	34.25
Youngstown, O			17.00	34.25
Indiana Harbor, Ind	6.75*j*	24.50*xb*	16.00	33.25
Sharon, Pa			17.00	34.25
Wheatland, Pa	7.75*a*	25.50*a*	17.00	34.25
Etna, Pa	10.00*d*	24.25*d*	17.00	34.25*b*
Fontana, Calif	+6.25*xb*	12.50*xb*	4.00*b*	21.25*b*

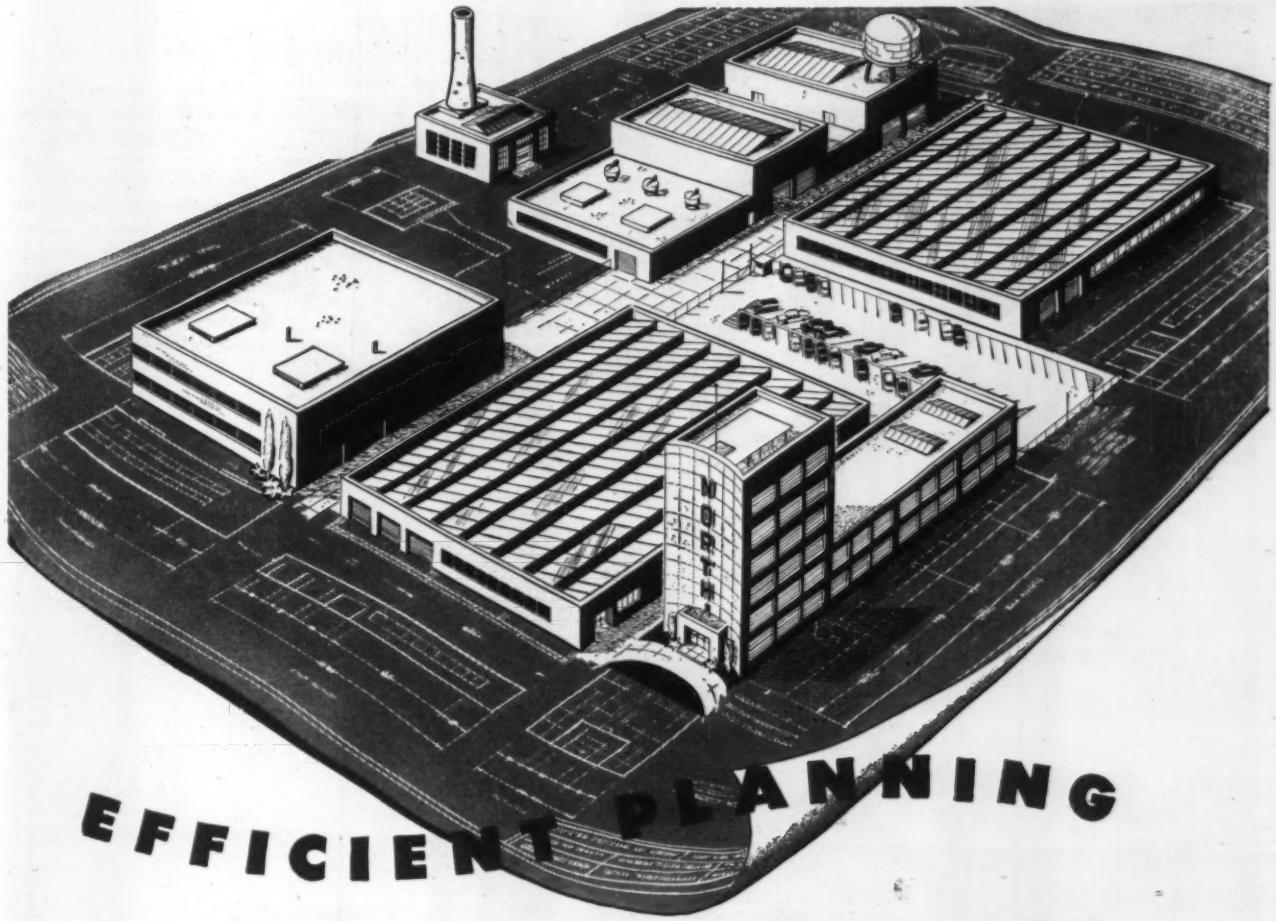
† Threaded and coupled. *a 3½ to 6 in. *b Continuous weld. *d 5 and 6 in. *l 6 in.

*a Class B & heavier. Based on existing freight rates; subjec to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b Extra strength ASTM C 200–44T *c 4-in., $90 *d SS361-A *e 30-in. *f 21 in. *g culvert pipe; reinforced, ASTM C 76–41 *h reinforced, ASTM C 75–41 *i reinforced, ASTM C 76–37 *j centrispun; no standard specs. in Canada *k 2% off for cash *l fob plant *m truck delivery *n LCL delivered, fob truck *o listed price based on LCL (no min.) *p freight allowed to destination in city *q ASTM C 13–40 *r CL fob origin, freight allowed *s 2 ft lengths *t 3 ft lengths *u CESA A 60–1941 specs. used *v standard strength *w 6 in., $1.67 per ft., Class 150, CL, fob track *x 6 in. *y ss; add 20% for d.s.

*WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe but add following "discounts" to get Pittsburgh mill price: *Butt Weld* — 1 in. black, + 32.75, galv. + 61.0; 1¼ in. black, + 32.75, galv. +60.50, 1½ in. black + 29.25 galv. + 56.75; *Lap Weld* — 2½ in. to 3 in. black + 33.50 galv. + 59.5; 4½ in. to 6 in. black + 30.50 galv. + 54.75. Add freight rates plus 3% transportation tax to get destination price.

(Continued on page 97)



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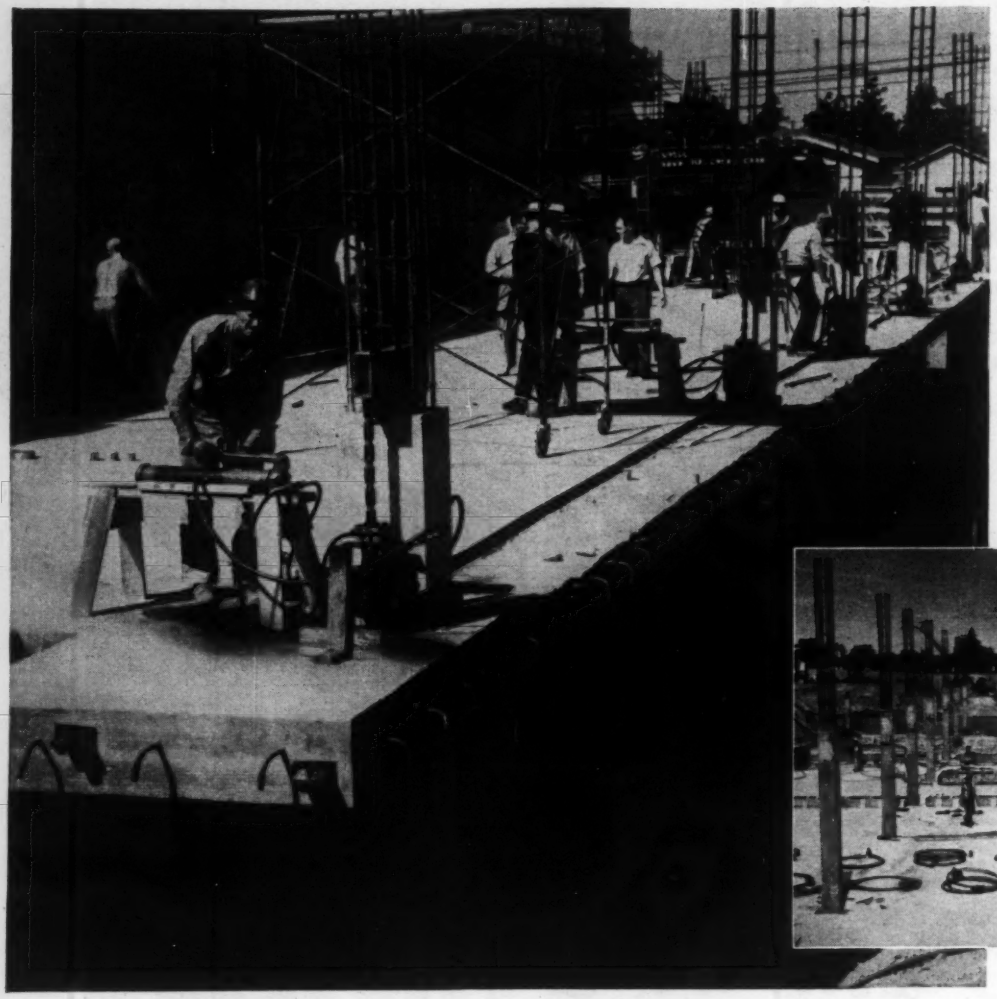
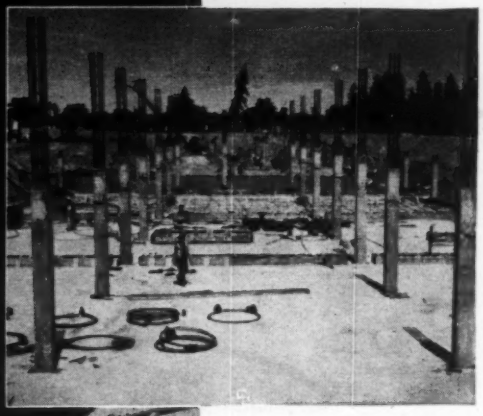


One slab nears the final position on its 12 steel-reinforced columns during construction of Spokane's Northtown Shopping Center. H. Halvorson, Inc. is general contractor for the project, which was developed by E. D. McCarthy and Associates; *Architect:* Carleton Tollefson; *Structural Engineers:* Kenneth P. Norrie and Associates—all of Spokane.



General view of project before slabs were in place, showing steel-reinforced columns extended to roof height.

Steel-reinforced columns carry floor in largest lift-slab job

The Northtown Shopping Center, now under construction in Spokane, Wash., is believed to be the largest project in the country to use the lift-slab method on reinforced concrete columns.

64,000 sq ft of slabs were hoisted in a total of 18 lifts for the four units of the Center. The largest slab, measuring 96 x 120 ft and weighing more than 500 tons, was lifted on 20 steel-reinforced columns by some 52 "climbing jacks," designed and manufactured especially for this job.

Bethlehem provided 85 tons of steel reinforcing bars, mainly for use in the 16 x 16-in. columns. Precast tilt-up walls for the Center, erected after the floors were in place, also required considerable reinforcing steel.

When Bethlehem supplies the reinforcing steel for a construction project, the bars are shipped completely fabricated, bundled and tagged. Service is prompt all along the line, from the start of placing plans to delivery, helping the contractor to maintain construction schedules.

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BETHLEHEM REINFORCING BARS

BETHLEHEM STEEL

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 90 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ⅜"	PLYWOOD Rail freight increment (See note for base price) ¾"
Atlanta † Baltimore * *Baltimore*	**$77.00** **86.00** *118.00g*	**$80.00** **91.00** *118.00g*	**$73.50** **84.00** *118.00g*	**$74.00** **84.00** *118.00g*	**$77.50** **87.00** *118.00g*	**$81.00** **84.00** *118.00g*	**$79.00** **100.00** *120.00q*	.... *$135.00*	.... *$135.00*	 **$160.00** 	 **$170.00** 	$22.32 25.92 	$27.24 31.60
Birmingham † *Birmingham*	**80.50** *105.00*	**82.50** *105.00*	**80.50** *108.50*	**87.50** *108.50*	**90.50** *108.50*	**95.50** *105.00*	**105.50** *105.00*	..... *105.00*	..... *105.00*	**120.50** 	**165.50** 	21.78 	26.58
Boston * ‡	**97/105a** *89.00n*	**104/114a** *89.00n*	**96/100a** *116/118*	**96/100a** *118/118*	**96/100a** *118/118*	**96/100a** *116/118*	..... *117.00*	..... *118.00*	..... *118.00*	 	 	25.92 	31.60
Chicago ** *Chicago*	**98.00** *103.00*	**101.00** *103.00*	**90.00** *111.00*	**105.00** *111/112*	**112.00** *111/112*	**115.00** *113/114*	**110.00** *120.00*	..... *120.00*	..... *120.00*	**139.00** 	**139.00** 	22.45 	27.37
Cincinnati * *Cincinnati*	**93.75** *96.00*	**94.75** *98.25*	**83.00** *108.00*	**90.50** *104.50*	**94.75** *105.50*	**103.00** *106.00*	**110.50** *130.25*	..... *130.25*	..... *130.25*	**131.75** 	**131.75** 	25.00 	30.48
Cleveland ** *Cleveland*	**92.00** *100.00*	**94.00** *102.00*	**92.00** *109.00*	**102.00** *109.00*	**102.00** *109.00*	**103.00** *109.00*	..... *120.00*	..... *120.00*	..... *120.00*	 	 	25.37 	30.93
Dallas k† Denver * Detroit ‡ *Detroit*	**70.00** *Not in stock* **112.00** *125.00*	**80.00** *119.75* **116.00** *125.00*	**65.00** *121.50* **105.00** *130.00*	**60.00** *121.50* **112.00** *130.00*	**60.00** *121.50* **118.00** *130.00*	**60.00** *122.50* **118.00** *130.00*	**130.00** *125.00* *160.00*	..... *137.75* *160.00*	..... *140.50* *160.00*	**130.00** 	**130.00** 	18.72 13.92 25.00 	22.80 16.98 30.48
Kansas City * *Kansas City*	**120.00** *125.00*	**120.00** *125.00*	**115.00** *120.50*	**120.00** *129.00*	**125.00** *129.00*	**125.00** *130.00*	..... *135.00*	..... *150.00*	..... *170.00*	 	 	16.56 	20.16
Los Angeles 1 Minneapolis ‡ Montreal * *Montreal*	*97.00* *145.00* **88.00** *165.00*	*97.00* *145.00* **97.00** *165.00*	*97.00* *145.00* **88.00** *165.00*	*97.00* *145.00* **88.00** *165.00*	*97.00* *145.00* **100.00** *165.00*	*97.00* *145.00* **118.00** *165.00*	*128.00* *165.00* *180.00*	*138.00* *165.00* *122.00*	*128.00* *165.00* *122.00*	 **99.50** 	 **99.50** 	16.61ab 19.89 	20.25ab 24.25
New Orleans † † New York ‡ *New York*	**100.00** *108.50* **112.50**	**100.00** *108.50* **115.50**	**92.50** *119.00* **122.50** *125.00*	**85.00** *118.50* **125.00** *125.00*	**90.00** *118.50* **125.00** *125.00*	**94.00** *118.50* **125.00** *125.00*	**118.50** *117.00* **165.00** *160/170*	..... *124.00* *165/175*	..... *124.00* *165/175*	**150.00** **240/260** 	**148.00** **240/260** 	18.72 25.92 	22.80 31.60
New York ** *New York*	**92.00** *100.00*	**94.00** *102.00*	**82.50** *105.00*	**93.00** *106.00*	**95.00** *106.50*	**98.00** *107.00*	**90.00** *109.00*	..... *123.00*	..... *125.00*	**185.00** 	**235.00** 	..... 	.....
Philadelphia ‡ *Philadelphia*	**Range from $115.00 to $135.00** *Range from $128.00 to $165.00*					**115/135** *128/165*	**115/135** *133/155*	**150.00** *150.00*	**150.00** *150.00*	**210/220** 	**210/220** 	25.92 	31.60
Pittsburgh † *Pittsburgh*	**Range from $95.00 to $100.00** *120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	**120.00** *125.00*	..... *145.00*	..... *145.00*	**120.00** 	**130.00** 	25.92 	31.60
St. Louis ‡ *St. Louis*	**111/116**	**113/118**	**117/123d** *122/128i*	**118/127d** *129/132e*	**121/127e** *129/132e*	**122/128e** *132/133e*	..... *160/176e*	..... *160/176*	..... *182/196*	 	 	18.72 	22.80
San Francisco A† Seattle † *Seattle*	*86.00* *72.50*	*86.00* *72.50*	*89.00* *72.50*	*87.00* *72.50*	*85.00* *72.50*	*84.00* *72.50*	*84.00* *75.00*	*86.00* *83.00*	*86.00* *84.00*	 	 	12.22 	14.91a

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8, 10, & 12 ft. lengths. *e* 8 to 16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* #3. A Rail freight rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock.

For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $170.00; on ¾", $191.00. Exterior ⅜", $190.00, ¾", $212.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness A quality	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	79%	80%	$0.2365	
Baltimore	78%d	80%d	.2365	
Birmingham	82%	83%	.1840	
Boston	77-10%	77-10%	.2365	
Chicago	76%	76%	.2365	
Cincinnati	76%	76%	.2365	Price of 60% Ammonia Gelatin is $0.15 per lb higher than 40% in U.S.: $1.75 per 100 lbs. higher in Canada.
Cleveland	76-10-10%	76-10-10%	.2765	
Dallas	75%	75%	.2440	
Denver	79%	79%	.2415	
Detroit	76-10-10%	76-10-10%	.2365	
Kansas City	80-10%	80-10%	.2415	
Los Angeles	73%	78%	.2390	
Minneapolis	75-10%	75-10%	.2415	
Montreal	40-5%be	40-10-5%b	21.35h	
New Orleans	78%	79%	.2415	
New York	80-10%	80-10%	.3975g	
Philadelphia	77%	79%	.2365	
Pittsburgh	80%	80%	.2090	
St. Louis	80-10%	80-10%	.2415	
San Francisco	70%	70%	.2365	
Seattle	73%	76%	.2390	

Glass: *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 - .1965	.2215-.229	.2415-.249
Rocky Mtn. States	.189 - .2015	.2215-.229	.2415-.254
Pacific N. W. States	.1865-.199	.219 - 2315	.239 - .2515
Pacific S. W. States	.184 - .1915	.2165-.219	.2365-.2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in. — 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	..	....
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	..	....
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots;

		8"x8"x8' Untr.	8"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak::	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.00	$4.00	$3.00	$5.00
	Mixed Oak	2.50	4.50	3.50	5.50
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	3.20a	....	4.10/4.20a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood:	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	2.20		2.50	
	Red Oak	2.10	2.65a	2.35	3.05a
	Sap Pine or Cypress	....	2.55a	....	2.90a
San Francisco	Douglas Fir	2.08ef	3.08af	2.73bf	3.93caf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb, f.o.b. works	.095
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb, dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works:::	10.35

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED			BRICK		LIME		
	Per M. lots of 2,000 pieces or over,			Per M. lots of 2,000 pieces or over,			Per M. in quantity		Per ton, in paper, Carload lot,		
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$124.65	$124.65	$249.30	$280.45	.....	.....	$24.50	$26.50	.....	.....	.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00*k*	41.00*k*	32.00	21.50	.....
Birmingham	126.00*p*	142.00*p*	253.00*p*	284.00*p*	354.00	438.00	25/26*ff*	30/31*gg*	29.25	24.00	.....
Boston	196.00†	209.00†	392.00†	283.25†	.....	.....	36.85*p*	39.85*p*	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	31.00	27.00	.....
Cincinnati	205.00*j*	215.00*f*	295.00*fdd*	.....	.....	.....	45.00*f*	46.00*f*	27.50*f*	27.50*f*	.....
Cleveland	170.00**	181.00**	.....	.....	.....	.....	36.50	36.50	28.75	23.75	33.50**
Dallas	.....	118.00	.....	.....	.....	.....	19.75	32.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	180.00	188.00	259.00	.....	315.00	360.00	37.50*ee*	38.50*ee*	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	29.25	29.25	32.00	27.50	28.50
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	27.50§	.....	34.00	34.00	35.00
Minneapolis	175.00*p*	196.00*p*	407.00*p*	196.00*pw*	.....	.....	35.00*wp*	45.00	40.00*bbe*	30.00*bbe*	42.00*bbde*
Montreal	165.00*aq*	181.00*au*	325.00*au*	230.00	248.00*	.....	39.50	46.00	34.80	22.00	13.75*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	147.30*h*	157.10*h*	216.00*eh*	238.10*hn*	.....	.....	41.00	.....	36.00	34.00	.....
Philadelphia	156.30	166.80	312.70	375.20	.....	.....	30/34	35/42	27.60	25.60	3.17
Pittsburgh	138.00	151.00	260.00	228.00	297.00	341.00	36.00	46.00*g*	25.00	23.00	2.97*m*
St. Louis	150.00*ee*	168.50*ee*	332.50*ee*	465.00*ee*	439.00	621.50	41.50*el*	43.00*s*	.90*eaa*	.75*eaa*	1.25*aaspes*
San Francisco	156.85*a**	177.10*a**	235.30*dda**	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	223.00*ee*	280.00*ee*	320.00	240.00*eew*	.....	.....	39.00*s*	49.00*s*	42.00*eAh*	37.50	3.90*mAh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverised hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *ee* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard; ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD	WHITE LEAD	READY-MIXED PAINT — Per gal., drums			ROOFING SUPPLIES; Carload lots f.o.b. factory				
	Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	Per 100 lb. in 100 lb. cases In oil *w*	Graphite *b*	Aluminum *c*	Ferric Oxide *d*	Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 300 lb. bbl. per ton
Atlanta	$17.75	$28.275	$3.26	$3.51	$3.01	$2.95	$2.45	$2.45	$0.60	$55.00
Baltimore	17.50	27.90	2.75	4.25	3.35	2.60	4.43	4.43	.47	45.00
Birmingham	17.75	28.275	3.90	3.40	....	2.42	2.04	2.04	.79*ff*	36.00*ee*
Boston	17.50	27.90	....	....	....	2.97*qq*	2.82*oq*	2.82*oq*	.42*g*	50.50*g*
Chicago	17.50	27.90	....	....	....	2.64‡*u*	2.37‡*o*	2.61‡*o*	40.00‡*bbr*	50.00‡
Cincinnati	17.50	27.90	....	....	....	2.49	2.31	2.31	.46*y*	49.36
Cleveland	17.50	27.90	2.22*pgg*	2.48*gg*	2.52*gg*	2.42*q*	2.04*o*	2.24*o*	.40*y*	42.70*hh*
Dallas	17.75	28.65	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.36	58.50*hh*
Denver	18.00	28.40	3.29	5.15	3.04	2.42	2.05*o*	2.23*o*	.43*ff*	45.00
Detroit	17.50	27.90	2.35	3.25	2.50	2.42	2.04*f*	2.24	.50	46.00
Kansas City	17.50	28.65	3.45	3.00*ys*	2.65	2.49	2.31*o*	2.31*o*	.38	59.00
Los Angeles	17.50	28.15	3.30*	4.50*	4.20*	3.10*	2.00**	*l*	.64*	*l*
Minneapolis	17.50	29.88/28.02	....	....	....	2.42*dd*	2.04*hidd*	2.29*hidd*	.44*idd*	44.00*r*
Montreal	....	21.95	2.95*Dff*	4.05*Eff*	3.25*Fff*	4.00*t*	3.65*tf*	3.65*t*	1.06‡*t*	3.30*h*‡
New York	17.50	27.90	....	....	....	2.42*g*	2.24*eo*	2.24*eo*	.41*ez*	44.00*
Philadelphia	17.50	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	17.50	27.90	2.68	2.85	3.15	2.75	2.60*o*	2.60*o*	.38	49.00
St. Louis	17.50	27.90	....	....	....	2.49	2.31*h*	2.31*h*	.38*y*	51.26
San Francisco	17.50	28.15	2.40	....	3.40	2.95	4.00*aa*	....	.49	.....
Seattle	17.50	28.40	3.07*mee*	2.93*mes*	....	3.45*moe*	2.91*hmee*	....	.59*mee*	52.00*mse*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. roll *p* 6-drum, 50 gal. ea. *q* Per 90-lb. roll. *r* F.o.b. factory, Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement; Price per ton. *ee* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt pitch in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *D.* Std Black. *E.* Ready-mixed. *F.* Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drums * Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Electrical Workers	Steam-fitters	Common Labor — Building	Common Labor — Heavy Const
Atlanta	$3.10	$2.50	$2.85	$2.60	$2.75	$2.90	$2.90	$1.33	$1.33
Baltimore	3.20*d*	2.75	3.325*i*	3.10/3.25	3.075*i*	2.975	2.975*t*	1.675*i*	1.675*i*
Birmingham	3.25	2.50	2.925*h*	2.32	2.72	3.00	3.125*h*	1.375	1.475
Boston	3.185*	2.75	3.325*i*	3.20	3.30*l*	3.13*R*	3.20*d*	2.14*Y*	2.14*Y*
Chicago	3.55*h*	3.30*	3.40*h*	3.15*w*	3.625*w*	3.53*l*	3.30*e*	2.50*h*	2.50*h*
Cincinnati	3.325	3.075	3.19*h*	2.85/3.10	3.10	3.28*N*	3.335*Z*	2.12	2.02
Cleveland	3.375*i*	3.325*il*	3.325*i*	3.175	3.325	3.325	3.325*	2.575	2.575
Dallas	3.50	2.75	2.875	2.75	3.437	3.00	3.00	1.45	1.45
Denver	3.50	2.85	2.85	2.78	3.375*i*	3.00	3.05	1.875	1.875
Detroit	3.45*ee*	3.21*ew*	3.35*	3.20*v*	3.49*dl*	3.52*B*	3.125*h*	2.45*	2.45*
Kansas City	3.625	2.75	2.90	2.725/2.97	3.25	3.18*o*	3.25*h*	2.03	2.055
Los Angeles	3.40	2.875	3.175*h*	2.72*d*	3.56*S*	3.20	3.35*	2.15*i*	2.15*i*
Minneapolis	3.225	2.80	2.97	2.75	3.00	3.15*n*	3.00	2.05	2.05
New Orleans	3.10	2.52	2.90**	2.70	2.725	3.00*h*	3.00*	1.425	1.425
New York	4.15*br*	3.57*hJ*	3.975*p*	3.84*J*	4.15*A*	3.63*aaF*	3.815*hL*	2.415*J*	2.415*J*
Philadelphia	3.92*i*	3.20	3.63*jM*	3.07/3.82*	3.625*S*	3.80**	3.615*	1.95	2.25
Pittsburgh	3.625*h*	3.20*h*	3.225*h*	3.35*h*	3.375*h*	3.50	3.375*h*	2.10*h*	1.98*
St. Louis	3.62*c*	3.125*h*	3.10*h*	3.125*h*	3.25*h*	3.50*c*	3.39*R*	2.175*h*	2.175*h*
San Francisco	3.65**	3.005*	3.175*h*	2.835*	3.50*mh*	3.30 *U*	3.35*K*	2.175*	2.175*
Seattle	3.40*d*	2.76*d*	2.95*d*	2.88*d*	3.25*d*	3.135 *X*	3.26*F*	2.35*d*	2.35*d*
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	2.05	1.25	1.40

* Cost of living bonus now included in basic wage. # Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

* 6 hr. day. *h* 7 hr. day. *i* Incl. 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF *d* Incl. 10¢ H&WF. *e* Incl. 10¢ VF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF *h* $2.725 homes & housing plus 7½¢ WF. *l* Incl. 17¢ WF *j* Incl. 10½¢/hr. WF. *k* Incl. 7½¢/hr. WF. *l* Incl. 4% VF. *m* Incl. 5¢/hr WF. *n* Incl. 25¢ H, W, Ins., Vac. & Retirement. *o* Incl. 10¢ PF, 7¢ WF. *p* Incl. 3% WF, 3% PF. *r* Incl. 4% WF and 20¢ PF. *s* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *t* Incl. 7½¢ H&WF. *u* Incl. 1½% PF. *v* Incl. 10¢ WF. *w* Negotiating. *x* Incl. 8¢ WF. *y* Incl. 22½¢ WF. *z* Incl. 7½¢ IF, 5¢ H&WF. *A* Incl. 15¢ WF, 15¢ PF & 20¢ B.F. *B* Incl. 3% WF, *C* Incl. 2½¢ H&WF. *D* Plus 6% WF, plus travel pay per day. *E* Plus $4/per day Annuity contrib. *F* Incl. 7¢ WF, 6% VF. *I* Incl. 15¢ H&WF. *J* Incl. 5% WF, 6PH. *K* Incl. 10¢ WF, 12½¢ VF, 7½¢ PF. *L* Incl. 3% WF, 3% PF, 2% VF, 1% EF. *M* Incl. 7½¢ PF. *N* Incl. 1% WF. *O* Incl. 10¢ WF, 1% PF. *R* Incl. 12¢ WF and 1¢ apprentice. *S* Incl. 12½¢ H and WF. *T* Incl. 21¢ H, W & VF. *U* Incl. 7½¢ WF, 4% VF, 1% PF. *W* Incl. 2% VF. *X* Incl. 6¢ VF. & 7½ H & WF *Y* Incl. 7¢ H & WF. *Z* Incl. 8½¢ WF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Jan. '55	Feb '55
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Struct. Iron Workers (8 hr. day) ..... Remachadores.	av. per hr.	1.37*	1.37*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1490.00	1490.00
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1490.00	1490.00
⅜" x 11 meters	per ton	1490.00	1490.00
½" x 11 meters	per ton	1490.00	1490.00
⅝" x 11 meters	per ton	1490.00	1490.00
¾" x 11 meters	per ton	1490.00	1490.00
1" x 11 meters	per ton	1490.00	1490.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	60.00	60.00
Rose Gravel	per tr. load	62.00	62.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
3rd Class Pine	per M ft.	850.00	850.00
1st Class Pine	per M ft.	1500.00	1500.00
2nd Class Pine	per M ft.	1300.00	1300.00

* 1st & 2nd floors. Aver rate $4.38

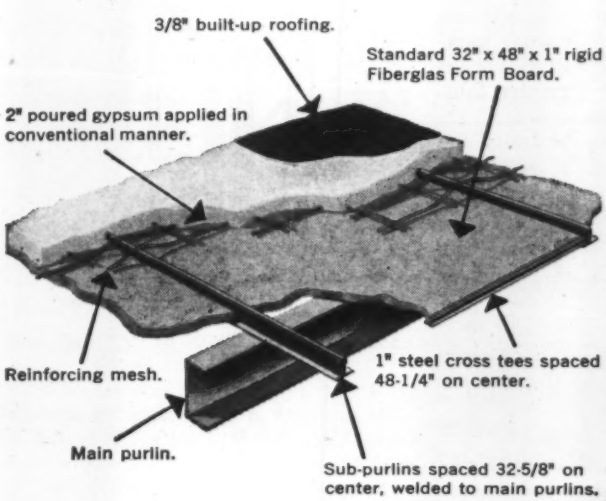
ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.190 **ENR Common Average:** $2.021

Gives your roofs two big extras at one low price!

Fiberglas Acoustical Form Board

Extra #1

A fire-safe acoustical ceiling


3/8" built-up roofing.
Standard 32" x 48" x 1" rigid Fiberglas Form Board.
2" poured gypsum applied in conventional manner.
Reinforcing mesh.
1" steel cross tees spaced 48-1/4" on center.
Main purlin.
Sub-purlins spaced 32-5/8" on center, welded to main purlins.

Extra #2

A highly efficient insulation

Fiberglas* Acoustical Form Board combines four functions in a single inorganic unit. First: it's a permanent, dimensionally stable form board. Second: it's a highly efficient roof insulation. Third: it's fire-safe. Fourth: it's an acoustical ceiling.

Yet in a poured-in-place deck, Fiberglas Acoustical Form Board compares in cost with a suspended acoustical ceiling alone! It's easily installed with gypsum or lightweight aggregate.

Specify Fiberglas Acoustical Form Board for schools, factories, shopping centers, all similar structures . . . get *two big extras* at one low price! For full technical data write Owens-Corning Fiberglas Corporation, Dept. 145C-10, Toledo 1, Ohio.

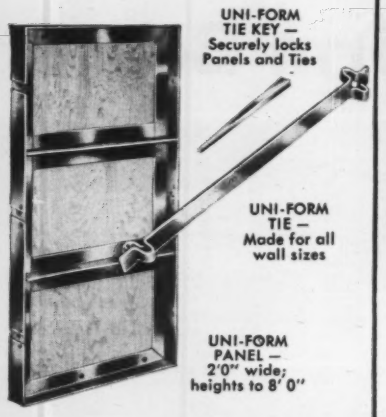
SOUND CONTROL PRODUCTS • ROOFING INSULATIONS
DUCT INSULATIONS • LOW TEMPERATURE INSULATIONS

*T. M. Reg. U. S. Pat. Off.

OWENS-CORNING
FIBERGLAS

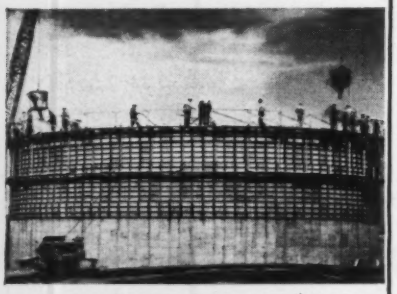
UNI-FORM
Concrete Forms

3 SIMPLE ELEMENTS FORM ANY CONCRETE STRUCTURE



UNI-FORM Concrete Forms are prefabricated steel-framed, plywood faced panels . . . ready to use when they reach the job.
UNI-FORM Ties and Keys lock and spread Panels into an automatically accurate form. No measuring — no guesswork. Completely versatile . . . they form straight, battered, circular, irregular or curved walls at lowest all around cost.

Rented . . . Sold . . .
Rented With Purchase Option



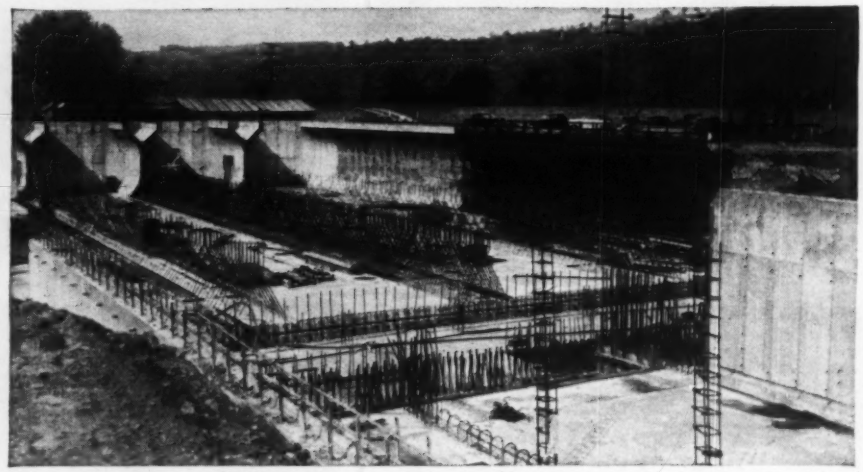
HIGH SPEED CIRCULAR WALL FORMING

UNI-FORMS provide faster, simpler and easier circular wall forming . . . one side alignment and bracing . . . absolute control of concrete, and safer, cleaner working areas.

Write for the UNI-FORM Catalog and complete details

UNIVERSAL FORM CLAMP CO.
1238 N Kostner Ave
Chicago 51, Illinois

Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



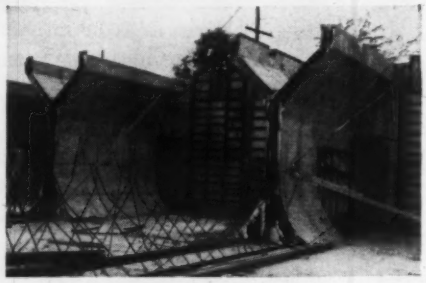
MECHANIZED FORMING with new "Y" wall trusses and UNI-FORM Panels speeds construction, saves labor and material

Field reports on a new system for forming "Y" walls in aeration tanks and settling basins indicate very satisfactory operation and important labor and material saving advantages for the system.

Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiroloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall forming system eliminate the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

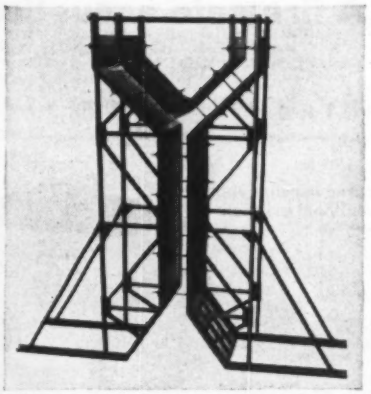


STRIPPED WALLS are clean and accurate

Erection, stripping and movement of the form can be handled either as individual pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

In this way, faster forming cycles, using minimum UNI-FORM equipment are possible, resulting in lower labor and material costs. UNI-FORM Panels are rented or sold, or rented with an option to purchase.



ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels

For complete details on Universal "Y" wall forms and UNI-FORM Panels, Write:

UNIVERSAL FORM CLAMP CO.
1238 North Kostner Avenue
Chicago 51, Illinois

Distributors and Branches in Principal Cities

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅜"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL per roll of 250 sf Single	Double
Atlanta	.....	$65.00	$45.00	$75.00	$75.00	$91.00	$75.00	$1.08	$75.00	$1.45[h]	$56.00	.....	.....
Baltimore	$46.50[f]	41.00[f]	31.00[f]	52.50[f]	62.00[f]	104.00[f]	66.00[f]	1.30	65.90	1.60	45.00	$4.25	$6.35
Birmingham	67.00	56.00	46.75	75.00	64.55	107.10	64.55	1.32	72.00	1.75	77.00	3.40[g]	5.20[g]
Boston	46.50[m]	41.00[m]	31.50[m]	48.00[m]	64.00[m]	109.00[m]	79.00[hh]	1.45	75.00	1.40	41.00	5.30	7.90
Chicago	67.00	56.00	41.00	57.00	80.00	117.00	79.00	1.60	84.00	.....	62.00[bb]	5.25	7.50
Cincinnati	44.01[w]	38.08[w]	30.08[w]	45.81[w]	65.00[w]	110.00[w]	65.00[w]	.....	61.00	1.25	75.00	5.95	8.95
Cleveland	45.50	36.50	40.00	65.00	75.00	110.75	75.00	1.35/1.50	75.00	2.20	60.00	.....	.....
Dallas	55.00	52.50	40.00	62.50	73.50	122.50	70.00	1.90	65.00	1.35	65.83	4.25	6.35
Denver	60.00	52.50	40.00	60.00	72.90	123.00	71.90	.....	71.00[r]	1.30	50.00	11.00[r]	21.00[r]
Detroit	55.00	48.50	33.75	54.00	54.00[cc]	93.00[cc]	54.00[cc]	.....	77.00[dd]	1.95[h]	.....	.....	.....
Kansas City	65.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	5.76	8.46
Los Angeles	50.00	45.00	0.31[e]	53.00	71.87	121.25	70.00	.....	80.00	1.35[ee]	48.00[f]	17.00[e]	25.40[e]
Minneapolis	74.00	85.00	0.40[e]	65.00	70.00	114.00	70.00	1.30	78.00	1.30	78.00	6.50	9.00
Montreal	58.00	.....	39.00	64.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Orleans	65.00	50.00	45.00	65/70	65.00	100/115	70.00	1.95	79.00	.....	.....	15.66[u]	27.66[u]
New York	50.00	44.50	34.00	51.00	65.00	108.00	65.00	1.55	69.00	1.90	72.00[f]	5.20	7.00
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20	.....	70/75	65/75	70/75	5.50/6	7/7.50
Pittsburgh	65.00	55.00	40.00	68.00	60.00	102.50	57.50	1.80	70.00	1.80	70.00	4.00	6.00
St. Louis	60.00	55.00	40.00	60.00	75.00	110.00	75.00	1.75	70.00	1.30	52.00	3.00	4.50
San Francisco	49.00[c]	41.50[c]	0.33[e]	53.00[k]	.....	94.00	60.25	1.60	72.00	1.55	53.00	4.78	7.50
Seattle	57.00	50.50	40.00	59.00	71.40	120.35	70.20	1.50[y]	81.00	1.65[e]	62.00[ee]	4.25[e]	6.75[e]

[a] for hand packing [b] per 30-# bag [c] carloads [d] 4', fob Alexandria, Ind [e] 56,000 sq ft up quantity [f] full trailer loads [g] 80-# kraft paper backing [h] LCL [i] flameproof $75.00 [j] 11,000 sq ft up quantity [k] plain core; asph core $56/M sq ft [l] 2-in: $52/M sq ft [m] 10 ton quantities [n] distributor's siding [o] per Msf rol [p] per sf [q] per cwt [r] per 27-# bag [s] fob plant, Santa Clara [t] honeycomb, 1¼-in [u] honeycomb 2½-in [v] fob city [w] per sq. yd. [x] 26-# bag [y] 32-# bag [z] fob warehouse [aa] 2"

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home insulation pellets	Plaster aggregate	Concrete aggregate‡ Treated	Untreated	ALUMINUM SHEET[a] Flat[f] .102" th 36"x96" & 48"x144"	Corr roof .032" th 35"x12'	STAINLESS STL SHEET[a]-TYPE 302[g] 20 ga 48"x96–120"	28 ga 36"x120"	COPPER WATER TUBING-TYPE L 2000 ft lots per ft[a] ⅜"[b]	½"[c]
			per bag of 4 cu ft				per lb[f]	per sh[u]	per cwt[hh]	per cwt[mm]		
Atlanta	$29.00	$36.00	$1.45	$1.35	$1.50	.....	$0.359[m]	$7.067[e]	$53.68	$61.18	$14.49[f]	$20.29[f]
Baltimore	20.16	32.00	0.95	1.15	.....	$1.15	0.370	9.377[r]	52.75	60.25	0.145	0.20
Birmingham	36.00	43.00	1.55	1.30	1.80	.....	0.389	8.04	54.18	61.68	0.1518	0.2129
Boston	21.00	.....	1.15	1.18	.....	1.30	0.424[g]	24.90[ee]	52.00[dd]	57.50[dd][ff]	0.1518	0.2129
Chicago	24.60	24.60	1.45	1.50	1.50/1.60	.....	0.416[e]	8.40[f][p]	56.25[f][ee]	63.75[f][ee]	0.1518	0.2129
Cincinnati	25.00*	22.00*	1.75	1.75	1.85	1.75	0.408	9.72	56.35	68.35[ff]	0.1518	0.2129
Cleveland	26.00	40.00	1.25	1.32	1.40	.....	0.369	7.569[ee]	52.00	59.05	17.26[f]	24.20[f]
Dallas	29.80	31.80	1.20	1.25	1.30	.....	0.379	0.439[r]	55.50	63.00	0.1449	0.2029
Denver	24.00	24.00	1.40	1.35	.....	1.50	0.389	8.339	54.07[ee]	61.57[ee]	0.1449	0.2029
Detroit	24.00	24.00	1.27	1.33	1.42	1.42	0.416	8.507	56.25	63.50	12.00[f]	24.21[f]
Kansas City	28.00	35.00	1.20	1.30	1.40	.....	0.389	7.77	56.77[ee]	64.27[ee]	15.18[f]	21.29[f]
Los Angeles	25.00	26.00	1.25[ii]	1.20[ii]	1.45[ii]	1.25[ii]	0.421	8.71	60.85	68.35	0.1518	0.2129
Minneapolis	31.00	31.00	1.30	1.60	.....	1.80	0.425	7.68	56.76	62.26[ff]	0.1440[d]	0.2020[d]
Montreal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Orleans	35.00	37.00	1.50	1.20	1.25	1.25	0.359	0.366[ee][hh]	56.68	64.18	0.1449	0.2029
New York	23.00	29.00	1.25	1.20	1.40	1.30[j]	0.389[f][ee]	7.74[f]	54.82	62.32	15.18[f]	21.29[f]
Philadelphia	23/25	32.00	1.35	1.35	1.35	1.40	26.50[f][ee]	7.55[f]	53.23[f]	60.98[f]	14.49[f]	20.29[f]
Pittsburgh	25.00	29.00	1.25	1.25	1.30	1.25	0.397	8.13	53.70	59.20	0.1518	0.2129
St. Louis	30.00	37.00	1.25	1.50[ff]	1.60[ff]	1.50	0.422[ee]	8.567[e]	53.14[hh]	71.14[hh]	15.18[f][m]	21.29[f][m]
San Francisco	24.00	26.00	1.05	1.03	.....	1.24	0.400	0.349[ee]	61.00	68.00	0.1449	0.2029
Seattle	33.00	36.50	1.45	1.25[h]	1.65	.....	0.359	7.067	60.50[ee]	68.00[ee]	0.1449	0.2029

† trucklots, delivered * fob whse ‡ delivered [a] fob city [b] ⅜" O.D. [c] ½" O.D. [d] 10M ft & over [e] 2–10M ft; 10M ft & up: $0.1925/ft [f] per 100 ft [g] 5 tons & up; cold roll, anneal & pickled; 2B finish [h] 15M lb [i] 3003 alloy; 1100 alloy: $0.456/lb [j] 1100 & 3003 alloy, mill finish [k] per bag of 3 cu ft [l] treated has air entraining agent; untreated does not [m] 2–10M ft [n] fob plant, fr allow [o] 5M lb & up [p] 100 sq ft quantity [q] 2M lb quantity [r] per lb [s] 36"x96": 10.81 lb/sh; 48"x144":21.7 lb/sh [t] 19.31 lb/sh [u] in 4M-lb skids; $0.296/lb in 1M-lb cases [v] 48"x144" [w] 36"x96" $13.25/sh [x] per 100 sq ft [y] 16M lb & up [z] fob mill [aa]26"x6-12' [bb] add $0.75/cwt for boxing [cc] 4 tons & up [dd] 26 ga [ee] add $2/cwt boxing; $0.75/cwt on skids [ff] Theoretical wt for 48"x96": 50.4-lb, per sh. [gg] 300-bag lots [hh] per 100-lb bag [ii] mill shipment; add $2 per cwt for immediate del [jj] Theoretical wt: 19.7-lb per sh

EQUIPMENT OPERATOR WAGE RATES

	Truck drivers 1½ T	−4 cy Dump	+4 cy	Tractor Operators incl bulldozers 34–49 hp	70–100 hp	100 & over	Tractor scraper 15–16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlant	1.40	1.40	1.60	2.335	2.335	2.335	2.325	2.85	2.85	2.325	2.10	1.55
Baltimore	1.65[e]	1.80[e]	1.90[e]	2.45/2.60[h]	2.45/2.60[h]	2.45/2.60[h]	2.45/2.60[h]	3.10/3.25[h]	3.10/3.25[h]	2.45/2.60[h]	2.45/2.60[h]	2.25
Birmingham	1.59	1.85[ff]	1.92[ee]	2.46	2.46	2.46	2.60	2.60	2.60	2.46	2.185	1.525
Boston	1.945[e]	.....	.....	2.825[d]	2.825[d]	2.825[d]	2.825[d]	3.20	3.20	3.20	2.555	2.18[r]
Chicago	2.00[f]	.....	.....	2.85[g]	3.00[h]	3.05[i]	2.85	3.30	3.30	2.95	2.95	.....
Cincinnati	2.00[f]	2.10[ff]	2.10[ff]	2.85	2.85	2.85	2.85	3.10	3.10	3.10	3.10	3.10
Cleveland	2.42	2.42	2.42	3.05	3.05	3.05	3.05	3.30	3.30	3.05	2.925[h]	2.925
Dallas	1.45	1.45	1.45	1.45/2.625[f]	1.50/2.625[f]	1.50/2.625[f]	1.50/2.625[f]	1.50/2.625[f]	1.60/2.625[f]	1.50/2.625[f]	1.45/2.00[f]	1.45/1.55[f]
Denver	2.00	2.00	2.10	2.00	2.61	2.61	2.61	2.78	2.78	2.61	2.61	2.225
Detroit	2.31[e]	2.31[e]	2.31[e]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	2.925[m]	.....
Kansas City	1.99[m]	1.99[e]	2.065[p]	2.175	2.725[e]	2.725[e]	2.725[r]	2.97	2.97	2.585[e]	2.725[f]	2.115
Los Angeles	2.255[e]	2.255[e]	2.285[e]	2.80[m]	2.80[m]	2.80[m]	3.21[m]	3.03[m]	3.03[m]	2.94[m]	2.50[m]	2.41[m]
Minneapolis	2.05	2.05[e]	2.20[e]	2.53	2.75[e]	2.97[e]	2.75	2.97[e]	3.23[e]	2.53	2.42	2.15
New Orleans	1.525	1.525	1.525	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.10	1.60
New York	2.12¼[aa]	2.52[hh]	2.52[hh]	3.176[cc]	3.176[cc]	3.176[cc]	3.31[cc]	4.095[cc]	4.095[cc]	3.31[cc]	3.31[cc]	2.78[cc]
Philadelphia	1.825/2.025[e]	1.825/2.025[e]	1.825/2.025[e]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	2.89[m]	2.05[m]
Pittsburgh	2.125	2.125	2.125	2.875	3.125	3.175	3.175	3.275	3.275	3.175	3.175	2.125
St. Louis	2.10	2.10	2.10	3.125[e]	3.125[e]	3.125[e]	3.125[e]	3.125[e]	3.125[e]	3.125[e]	2.525[e]	2.10
San Francisco	2.10	2.10	2.33[w]	2.845	2.845	2.845	2.845	3.175	3.175	3.005	2.455	2.175
Seattle	2.405[n]	2.405[dd]	2.605[ee]	2.53	2.73	2.73	2.73	3.08	3.08	2.83	2.53[hh]	2.40
Montreal	1.25	1.25	1.25	1.63	1.63	1.63	1.63	1.89	1.89	1.63	1.70	1.50

[a] incl 5¢/hr HWF [b] lower rates, straight time, other broken [c] 2-axle; 10-wheel $2.00; Euclid $2.20 [d] Intermediate [e] bldg constr; highway $2.075 [f] less than 2-t [g] blade [h] scoop, bldg [i] scoop, road [j] plus $2 pd by employer for hosp. death benefits to family [k] bldg constr; steel constr $3.30 [l] higher rates are union, other taken from min wage scale approved by County Commissioners Court [m] incl 10¢ H&WF [n] flatbed [o] under 10 cy [p] over 10 cy [q] over 50 hp [r] blade grader [s] form and subgrade [t] single [u] incl 7½¢ HWF [v] up to 6 cy [w] 6–8 cy [x] cat oper [y] up to 3½ cy [z] 3½ cy & over [aa] applies to local 807 [bb] incl 3% WF 2% PF, 11 PH [cc] incl 5% WF [dd] up to 5 cy [ee] 5 cy & over [ff] 3 T but not incl 5 [gg] 5 tons & over [hh] excavating [ii] crane $2.10, heavy $2.30

This is the "Torture Chamber"... Here TDA proves axle quality!

An axle is picked out of stock—then subjected to such tests as a simulated "chuckhole" shock every 4 seconds, 24 hours a day for months! Or a "bend test" on an axle housing for 1,000,000 cycles. Or an axle shaft "twist test" of 14° backwards and forwards 36 times a minute, 24 hours a day, days on end. We even simulate 500,000 miles of the toughest driving situations in just a few days—or invent a test like driving uphill with a full load from California to New York nonstop! *There's no other testing like it!*

WE HIT 648,000

in the famous, one-and-only indoor proving ground!

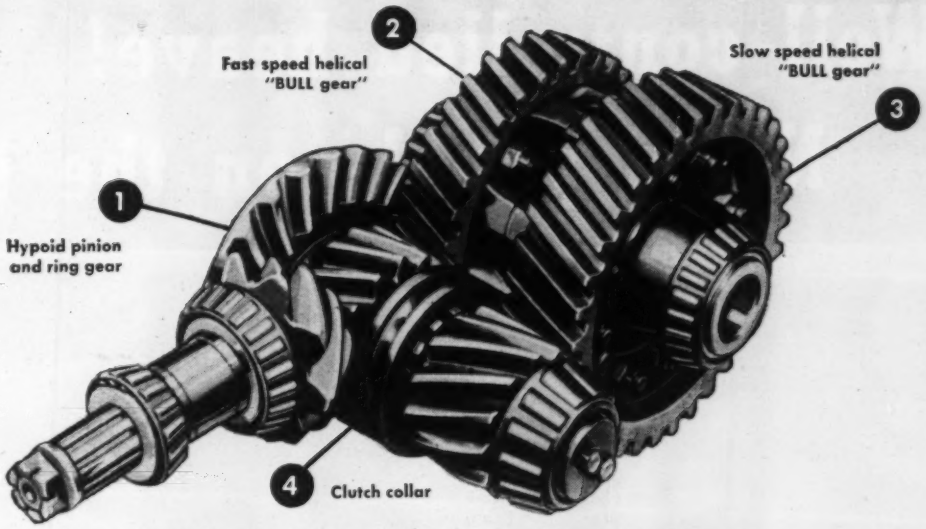
We give axles a merciless beating! Equal the worst possible operating conditions. Then throw in some devilish tests of our own!

It's without equal! Nowhere else does such murderous torture show you *in advance,* how an axle is built to stand it on the job!

We've condensed a multi-thousand acre proving ground into one room in the Timken-Detroit "Torture Chamber." Here, our engineers can put over 50 years of experience to work for you—unsurpassed experience, obtained in building axles for all types of trucks, buses, trailers, farm machinery. Here, we can give stock axles and gearing "the works" *indoors,* to any *outdoor* operating condition—under scientific control and analysis.

How do you benefit? In longer axle life, less maintenance, repairs and downtime; lower operating costs. That's why Timken-Detroit axles are the choice of leading manufacturers and operators.

Meet our "Torture Tester"! With graphs showing speed and torque performance under any operating conditions he chooses—with special dials, recorders and electronic devices—he actually *drives* axles with scientific accuracy from his chair!



EXCLUSIVE DOUBLE-REDUCTION DESIGN...
gives TDA 2-speed axles far greater gear ratio "spread"!

Unequalled Flexibility! Only Timken-Detroit 2-Speed Axles are available in *three* different ratio "spreads" to meet any transmission-engine combination: 28%, 37% or 49%. Unlike ordinary designs that are limited to 37%, this Timken-Detroit Axle selection may be obtained simply by changing the low speed helical gear set.

How TDA 2-Speed Principle Works: A husky hypoid ring gear and bigger, stronger pinion set (No. 1 above) provides the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second step.* Both sets are of balanced size and capacity. One set (No. 2) is for fast speed—the other (No. 3) is for slow speed. The clutch collar (No. 4) moves to left or right to engage one helical pinion or the other. The helical pinion not in use idles.

The Result: Complete elimination of small, complicated parts and midget-size gears! Larger hypoid-helical design gives more teeth in contact—reducing load per unit of contact area—for more positive, quiet operation. Bearings are larger. There's longer engine and truck life. When you divide the total gear reduction, you double its life expectancy. TDA gears operate in either ratio *indefinitely* without overheating.

"CHUCKHOLES" A MONTH

Timken-Detroit Axle

TIMKEN Detroit AXLES

TIMKEN DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

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"TORTURE-TESTED"
to Save Money on the Job

World's Largest Manufacturers of Axles for Trucks, Buses and Trailers

Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio New Castle, Pennsylvania

New TDA brake shoes save up to 40 lbs. per axle

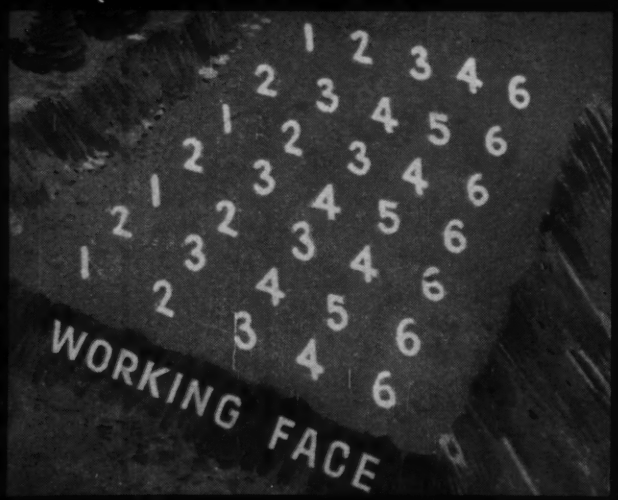
• Lightweight, pressed steel construction to give you more payload plus long wear and safety. Exclusive ¾" TDA "Econoliner" brake liners held rigidly by 12 deep set rivets per block —*not bolts.* Liners are thickest at center where greatest wear occurs—taper down at ends. Result—longer wear, greater stopping ability. New cam roller mountings never seize or brinell. Light nylon camshaft bearings wear up to 4 times as long!

Well-controlled heave!
Not a pebble on the track!

MISSION: Keep blast off railroad track.
METHOD: Shoot it with ROCKMASTER® millisecond delays. Use alternate pattern for planned throw.

Little spouting. Good, controlled heave. No wild flying rock. Excellent breakage gives easy digging.

Muck pile shows good displacement . . . but not a pebble on the track. Large rock easily accessible for quick removal.



ROCKMASTER millisecond delay pattern chosen helps hold side-hill cut. Holes on upslope side fire first and provide line of relief. Succeeding rows influence heave of burden up slope.

CUTTING through this particular section of the West Virginia Turnpike called for good, neat shooting. S. J. Groves & Sons Co., contractors, had to keep the blast off the nearby C & O track —yet get a well-controlled side-hill cut.

The shot was called right, using a pre-planned pattern of ROCKMASTER® millisecond delay blasts. The rock was pre-stressed, broken, and piled—exactly where wanted.

Ask your Atlas representative about ROCKMASTER, the modern method of pattern blasting that gives you real efficiency, good public relations, and a well-controlled, economical construction tool.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Limestone**—FIRE STATION—BA On Or About 3/31—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., structural fire station and A. M. Club addn., Loring Air Force Base, ENG-19-016-55-95, $200,000-$300,000. Plans deposit $10. CD 2/16.

MASSACHUSETTS—BA 4/5—At office Secretary-Treasurer Massachusetts Turnpike Auth., 80 Boylston St., Boston, Zone 16,

Russell and Montgomery—Contr. 51-040 Westfield River Bridge. Plans deposit $35, Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, Zone 16, general consulting engrs., adv. ENR 3/10. CD 8/11.

MASSACHUSETTS—BA 4/7—At office Secretary-Treasurer Massachusetts Turnpike Auth., 80 Boylston St., Boston, Bone 16,

Sturbridge—Contr. 51-072, hy. and bridge constr. Plans deposit $50, Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, Zone 16, general consulting engrs., Fay, Spofford & Thorndike, 11 Beacon St., Boston, section engrs. adv. ENR 3/10. CD 8/11.

BIDS ASKED—BUILDINGS

▲ **Mass., Amherst**—SCHOOL—BA 3/22—Towns Amherst and Pelham, Amherst-Pelham Regional Dist. School Comn., Ralph W. Goodrich, secy, Town Hall, regional high school adjacent to Pratt Hospital and Community Field. $1,200,000. Plans deposit $50 refundable, Nichols & Butterfield, 988 Farmington Ave., West Hartford, Conn., archts. CD 11/18/53.

Conn., Stamford—CHURCH, etc.—BA 3/29—First Presbyterian Church, c/o Sherwood, Mills & Smith, archts., 65 Broad St., church and educational bldg., north of Hoyt St. $500,000. CD 7/12.

SOON LETS CONTRACT—BUILDINGS

Mass., Lawrence—PRINTING and EMBOSSING—Bolta Products (Div. General Tire & Rubber Co.) 70 Garden St., soon lets contract 60,000 sq. ft. printing and embossing bldg. $700,000. E. J. Von Der Heide, Hudson, O., archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., State Houes Annex, Concord,

Peter Salvucci & Sons, Inc., 55 Pond St., Waltham, Mass., LB $912,317, est. $900,000. highway and bridge, White Mountain, F 27-1 (1), F 027-2- (1), ER 12, Ossipee and Tamworth. Bids Feb. 24. CD 2/4.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

Gilbane Building Co., 90 Calverly St., Providence, R. I. LB $3,758,003. Contr. No. 51-081. hy. and bridge Grafton and Millbury. Bids Feb. 23. CD 2/1.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Kelleher Corp., 35 Walnut St., Turners Falls, Mass. CA $543,794, est. $600,000. hy. and bridges, New Ashford and Williamstown. Bids Feb. 23. CD 2/9.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

Clark, Farrell & Rogers Co., 401 Cotton Exchange, Memphis, Tenn. CA $3,969,258, est. $4,000,000. Contr. 51-071 hy. and bridge constr., Sturbridge and Charlton. CD 2/4, under LB.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

Grandview Constr. Corp., 740 S. Fulton Ave., Mount Vernon, N. Y. CA $3,764,692, est. $3,500,000. Contr. 51-052. hy. and bridge constr., Palmer. CD 2/11, under LB.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

M. DeMatteo Constr. Co., 200 Hancock St., Quincy, Mass. CA $4,789,168, est. $4,800,000. Contr. 51-091, hy. and bridge constr., Framingham. CD 2/1, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston,

Munroe-Langstroth, Inc., 1390 Providence Hy., Norwood, Mass. CA $1,721,122, est. $1,750,000. Proj. 880, bridge Revere Beach Hy., Medford and Everett. Bids Feb. 17, awarded Feb. 24. CD 2/23, under LB.

† **Granger Contg. Co., Inc.**, 306 Main St., Worcester, Mass. LB $525,889, est. $500,000-$600,000. AC and troop supply warhouse, Chicopee Falls Air Force Base, ENG-19-016-55-35, CHICOPEE FALLS, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 25. CD 1/31.

Pacella Bros. Corp., 247 Washington St., Dedham, Mass., CA $919,590, est. $1,000,000. No. 558, Sect. C, East St. Branch Interceptor, Roosevelt Ave. Branch Interceptor and Mill St. Branch Interceptor, R.O., Blackstone Valley Sewer Comn. at Central Falls, PROVIDENCE, R. I. State of R. I. and Providence Plantations, F. A. Adams, purch agt., State House, Providence, R. I. Bids Jan. 6. CD 1/11, under LB.

▲ **Coker Constr. Co. & Peter Kiewit Sons Co.**, National Bank Bldg., Omaha, Neb., CA, tunnel construction;

C. W. Blakeslee & Sons, Inc., 58 Waverley St., New Haven, Conn., CA, work outside tunnel, Total est. $8,000,000, tunnel dam and pipe line from Hammonasett River Reservoir to North Guilford, NEW HAVEN, CONN. New Haven Water Co., 100 Crown St., New Haven, Conn. Bids Dec. 20. CD 12/16.

BUILDINGS

LOW BIDS AND CONTRACTS

C. H. Nicherson & Co., P.O. Box 486, Torrington Conn., CA, $551,990, B-A-X-65, EMPLOYEES Bldg., State Training School, MANSFIELD, CONN. State, Ralph G. Macy, P. Wks. Comr., State Office Bldg., Hartford, Conn. Bids Jan. 26, CD 2/1, under LB.

▲ **Tumblebrook Acres**, c/o Jerome Ketter, East Hartford, Conn. Owner Builds. $1,200,000. 100 RESIDENCES, Birchwood Park, Simsbury Rd., WEST HARTFORD, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **D. C., Wash.**—STEAM SUPPLY LINE—BA 3/14—General Services Admin., P. Bldgs. Service, General Services Bldg., replacement of steam supply and return lines, Arts and Industries Bldg., Smithsonian Institution Proj. 49-160-3. CD 10/19/53, under Public Buildings.

† **Md., Bainbridge**—LIGHTING—BA 3/15—Dist. P. Wks Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., replacement lighting in three 2 story bldgs. Nos. 622, 623 and 624 at Naval Training Center, NOY 86579, Spec. 45318. Plans deposit $10. CD 3/27/51, under Public Buildings.

N. Y., Canton—BA 3/17—Henry A. Cohen, dir., Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, connections to sewage disposal plant, State University Agricultural & Technical Institute at St. Lawrence University, Spec. 18639. Plans deposit $5.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

N. Y., Springville—PARK UTILITIES—BA 3/17—Henry A. Cohen, dir., Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, installing water service line and replacement of gas service line, Roswell Park Memorial Institute, Biological Station. Plans deposit $5.

N. Y., Watertown—ELECTRIC WORK—BA 3/17—Henry A. Cohen, dir. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, rehabilitation electric work, State Armory, 190 Arsenal St., Spec. 19263. Plans deposit $5.

New York—LIGHTING EQUIPMENT—BA 3/18—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, furnish, install lighting equipment for the Grant Avenue Station, Fulton Street Exten. of the New York City Transit System, Brooklyn Boro.

† **Md., Andrews Air Force Base**—SEWAGE TREATMENT PLANT—BA 3/24—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., sewage treatment plant addn., ENG-49-080-55-57-(51). CD 2/23.

N. Y., New Paltz—GROUND IMPRVS.—BA 3/24—Henry A. Cohen, dir. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, ground imprvs. Library Bldg. No. 4, State University Teachers' College. Plans deposit $15.

BIDS ASKED—BUILDINGS

▲ **N. Y., New York**—HOUSING—BA 3/22—New York City Housing Auth., 299 Broadway, Zone 7 (1) foundations and general constr. (2) heating and ventilating (3) electrical work (4) plumbing; furnish and install elevators for Washington Houses (Proj. No. NY-5-14) Sect. II incl. Bldgs. Nos. 7 to 14 (inclusive) in area bounded by E. 104 St., 2 Ave., E. 100 St., E. 99 St. and 3 Ave., Manhattan Boro. Plans deposit $75, $25 elevators. CD 11/5/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

Paragon Eng. Co., Oneonta, N. Y., LB $179,941 est. $226,000, grading, paving, misc. work, New York State Thruway-Mohawk Sect.-Sub. 5 (Westmoreland Gas Station and Restaurant Site). M.T. 55-1, Oneida Co.;

C. D. Murray Co. Inc., Lafayette Bldg., Syracuse, N. Y. LB $171,180, est. $224,000. grading, paving, misc. work. New York State Thruway-Ontario Sect.-Sub. 4 (Port Byron Gas Station and Restaurant Site), O.T. 55-2, Cayuga Co.;

Cold Spring Constr. Co., 3 Jackson St., Akron, N. Y. LB $155,521, est. $175,000, grading, paving, misc. work New York State Thruway-Ontario Sect.-Sub. 15 (Clarence Gas Station and Restaurant Site). O.T. 55-6, Erie Co.;

Syracuse Constructors, Inc., 330 Pulawski St., Syracuse, N. Y., LB $230,866, est. $268,000, grading, paving, misc. work, New York State Thruway-Mohawk Sec.-Sub. 8B (East Syracuse Gas Station and Restaurant Site) M.T. 55-2, Onondaga Co.;

Warren Bros. Roads Co., 309 Basin St., Syracuse, N. Y. LB $180,084, est. $225,000, grading, paving, misc. work New York State Thruway-Ontario Sect.-Sub. 7 (Warners Gas Station and Restaurant Site), O.T. 55-1, Onondaga Co.;

A. E. Ottaviano, Inc., 80 Brook St., Croton-on-Hudson, N. Y., LB $188,464, est. $225,000. b. conc. opt. HGS comp. I-beam 292.4 ft., 0.3 mi. New York State Thruway-Catskill Sect.-Sub. 5 (Newburgh to New Paltz) Union Ave. Highway Grade Separation (Co. Rd.). C.T. 55-3, Orange Co.;

Peckham Road Corp., 50 Haarlem Ave., White Plains, N. Y. LB $178,956, est. $227,000. grading, paving, misc. work, New York State Thruway-Catskill Sect.-Sub. 5. (Plattekill Gas Station and Restaurant Site). C.T. 55-2, Orange Co.;

Potter-DeWitt Corp., Pavilion, N. Y., LB $159,702, est. $233,000. grading, paving, misc. work for New York State Thruway-Ontario Sect.-Sub. 2 (East Pembroke Gas Station and Restaurant Site). O.T. 55-5. Genesee Co.; LB $145,639, est. $170,000, grading, paving, misc. work, New York State Thruway-Ontario Sect.-Sub. 8A (Scottsville Gas Station and Restaurant Site). O.T. 55-4, Monroe Co.;

John Arborio, Inc., West Cedar St., Poughkeepsie, N. Y. LB $165,577, est. $218,000, grading, paving, misc. work New York State Thruway-Catskill Sect.-Sub. 5 (Modena Gas Station and Restaurant Site), C.T. 55-1, Orange Co.;

D. W. Winkelman Co., Inc., Heffernan Bldg., Syracuse, N. Y., LB $180,635, est. $220,000. grading, paving, misc. work New York State Thruway-Ontario Sect.-Sub. 12 (Victor Gas Station and Restaurant Site), O.T. 55-3, Ontario Co. Bids Feb. 24. CD 2/1.

LeChase Constr. Corp., 29 Saratoga St., Rochester, N. Y. LB $310,653, general constr.;

Joseph Davis, Inc., 120 W. Tupper St., Buffalo, N. Y. LB $73,434, heating, ventilating;

Henry M. Dechert, Inc., 181 Allen St., Buffalo, N. Y. LB $207,886, plumbing;

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Permite N-Tair is a complete and homogeneous solution, guaranteed not to segregate, settle out, become gummy, or lose efficiency during storage. It is not corrosive; does not react with components of concrete.

Permite N-Tair does not increase in viscosity appreciably with a decrease in temperature until the freezing point is reached. This freezing point occurs at approximately 28° F. Freezing does not affect the air entraining efficiency of Permite N-Tair. After thawing, it may be successfully used as before freezing.

A double strength solution designated as Permite N-Tair D.S. can also be supplied. In the event that the use of N-Tair D.S. is permitted, it will be more economical to use. Only ¼ to ½ ounce per bag of cement would be required, compared to ¾ to 1 ounce per bag of cement with the normal strength Permite N-Tair.

Permite N-Tair is a clear amber, low viscosity liquid, consisting basically of a solution of sodium resinate produced from the hydrocarbon extract of pine wood, from which the bulk of the petroleum naphtha soluble resin acids has been removed.

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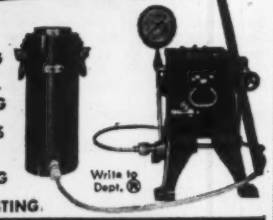

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Sans Corp., 132 Blackstone Ave., Jamestown, N. Y. LB $147,777, electrical work for Type "C" gas stations and restaurants, at Scottsville and Victor, for New York State Thruway Auth., NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Feb. 24.

▲ **New York City Transit Auth.**, 370 Jay St., Brooklyn 1, N. Y. rejected bids Dec. 3, DeKalb Ave. reconstr., LB $6,221,337, Prop. 1, Sect. 1, Bridge to Willoughby St.; LB $9,999,782, Prop. 2, Sect. 2, Willoughby St. to Ashland Pl.; LB $14,298,158, Prop. 3, Secs. 1 and 2, Brooklyn Boro, NEW YORK. Will re-advertise. CD 12/15, under LB.

J. Rich Steers, Inc., 17 Battery Pl., New York, N. Y. LB $198,300, Centerline Pier, Contr. NYA-580.001, New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave., New York, 11 N. Y. Bids Feb. 18. CD 1/18/54.

† **Philsan Co.**, 152 W. 42 St., New York 36, N. Y. LB $229,469, Air National Guard Facilities, FY-1955, Hancock Field, ENG-30-075-55-270, SYRACUSE, N. Y. U. S. Eng. 111 E. 16 St., New York, N. Y. Bids Feb. 23 CD 1/14.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,

Reid Contg. Co., Inc., 23 Main St., Woodbridge, N. J., LB, $7,303,288 (A), $7,496,414 (B), $7,462,884 (C) Contract W-3, grading, drainage, paving, structures etc. from Interchange No. 6 (Pennsylvania Turnpike Connection) to North of Cranbury-South River Road, Burlington, Mercer and Middlesex Counties;

Savin Constr. Corp., 10 Village St., East Hartford, Conn., LB $5,707,339 (A), $5,968,031 (B) $5,927,919 (C) Contract W-4, grading, drainage, paving, structures from North of Cranbury-South River Road to Woodbridge Interchange, in connection with constr. of widening of New Jersey Turnpike, Middlesex Co. Bids Feb. 25. CD 2/3.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave. Trenton,

Gallo Asphalt Co., 1000 Springfield Ave., Irvington, N. J. CA, $656,430, pavement widening 3.468 mi. Route 27 (section 20) from Woodbridge Ave. to Bridge St., Highland Park and Metuchen, Middlesex Co. Bids Feb. 15, awarded Feb. 24. CD 2/18, under LB.

▲ **NEW JERSEY-PENNSYLVANIA**—State Hy. Dpt., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton, N. J.,

George M. Brewster & Son Inc., 275 W. Fort Lee Rd. Bogota, N. J. LB $3,226,415, grading, paving, bridges 0.791 mi. Route 42 North-South Freeway from Station 212 plus 0 to Route U. S. 130, Fed. Proj. U-193 (2), Camden Co., N. J., second stage of approach sys. to Gloucester and Phila. Bridge. Bids Feb. 24. CD 2/11.

Peter D'Adamo & Son, 4109 Pinkney Rd., Baltimore 15, Md. LB $59,610. Items 7, 8 and 9;

Marocco Constr. Co., 231 S. Exeter St., Baltimore 2, Md. LB $95,385. Items 10, 11, 12, 20, 21, 22, Contr. 421 D. S. & W. group bids, various sections, TOWSON, MD. Comrs. Baltimore Co., Court House, Towson, Md. Bids Feb. 24. CD 2/14.

BUILDINGS

LOW BIDS AND CONTRACTS

Sam Lefrak, 97-27 64 Rd., Rego Park, N. Y. Owner Builds. $350,000. 6 story APARTMENT, 2397-2403 Nostrand Ave., BROOKLYN, N. Y. CD 1/6.

Angelo Salerno, 1621 Utica Ave., Brooklyn 3, N. Y. Separate Contracts. $106,500, 1 story FACTORY BLDGS., 863 and 867 E. 52 and at 5348-5360 Kings Hy., BROOKLYN, N. Y. CD 12/2.

John W. Cooper Co., Inc., Sidway Bldg., 775 Main St., Buffalo, N. Y., CA $614,700. general constr. 138-cell steel, concrete Erie County JAIL addn., 10 Delaware Ave., BUFFALO, N. Y. Erie County, County Hall, Buffalo, N. Y. James, Meadows & Howard, 250 Delaware Ave., Buffalo, N. Y., engrs.-archts. CD 5/7/47.

▲ **Boulevard Leading Corp.**, c/o George Miller, archt., 125 W. 45 St., New York 19, N. Y. Owner Builds. $1,000,000. 6 story APARTMENT, Queens Blvd. and 64 Rd., FOREST HILLS, N. Y. CD 1/28.

Hartsdale Town House, Inc., c/o Oscar L. Silverstone, archt., 666 Fifth Ave., New York 19, N. Y. Owner Builds. $700,000. 6 story APARTMENT for 78-families, 140 East Hartsdale Ave., HARTSDALE, N. Y.

▲ **Cameo Park Homes**, c/o Stanley Shaftel, archt., 89-47 163 St., Jamaica, N. Y. Owner Builds. $3,000,000. 283 HOUSES, tract at Wicks and Commack Rds., south of Jericho Turnpike, HUNTINGTON, N. Y.

▲ **Sherbrooke Manor Homes**, c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, N. Y. Owner Builds. $2,500,000. 156 HOUSES, Cuba Hill and Clay Pitts Rds., HUNTINGTON, N. Y.

Parkville Apartments, Inc., c/o George G. Miller, archt., 125 W. 45 St., New York 19, N. Y. Owner Builds. $450,000. 6 story APARTMENT, 153 St. and 90 Ave., JAMAICA, N. Y. CD 11/18.

▲ **Federal Leasing Corp.**, 97-27 64 Rd., Forest Hills, N. Y. Owner Builds. $1,500,000. 6 story APARTMENT, 83 Ave. and Queens Blvd., KEW GARDENS, N. Y. CD 10/11.

Walnut Realty Co., c/o George Miller, archt., 125 W. 45 St., New York 19, N. Y. Owner Builds. $875,000. 6 story APARTMENT, 116 St. and 84 Ave., KEW GARDENS, N. Y. CD 12/21.

▲ **Delano Estates Homes**, c/o Alwin Cassens, Jr. archt. 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $3,000,000. 125 HOUSES, 70-acre tract, east side Hudson River, NEWBURGH, N. Y.

Harry Match, 601 E. 19 St., Brooklyn 26, N. Y. Owner Builds. $750,000. 6 story APARTMENT, 400-500 W. 186 St., NEW YORK, N. Y. CD 1/28.

(Continued on page 109)

Model 145 Dart Truck equipped with Allison TORQMATIC DRIVE being loaded at Sunnyhill Coal Company's New Lexington, Ohio, mine. Truck is one of 10 operated by Sunnyhill.

10 trucks replace 30 –cut costs 62%

WHEN 10 50-ton trucks equipped with Allison TORQMATIC DRIVES replaced 30 mechanical-drive 20- and 30-ton trucks at Sunnyhill Coal Company's New Lexington mine:

Operating costs dropped *18.6¢ per ton,*
Maintenance costs were cut *13.1¢ per ton,*
And the TORQMATIC-*equipped trucks now haul 32.6* more *tons per truck hour.*

But lower costs are only part of the story.

On-the-job accidents have dropped sharply. Drivers stay fresher, more alert because they now have no clutch pedal to push – quick-shift at full throttle with finger-tip hydraulic control—have only 3 shifts instead of 7 or 10.

Wet weather worries have almost disappeared—road maintenance costs are lower. Smooth power transmission by the Allison TORQMATIC DRIVES lets trucks drive through mud and muck—conditions that often shut down the mine before TORQMATIC-equipped units came on the job.

Big reason for lower operating and maintenance costs is shock-free power transmission by the *matched* TORQMATIC Converter-Transmission teams. The Converter absorbs shock loads instead of transmitting them along the drive line—protects engine, differential, drive shaft and transmission from damage.

There's an Allison TORQMATIC DRIVE for your 40- to 400-horsepower gasoline and Diesel equipment. New low-cost 40-150 h.p. TORQMATIC Converters easily fit present equipment, are completely self-contained for simple installation. Get full details about Allison TORQMATIC DRIVES from your equipment manufacturer or dealer or write:

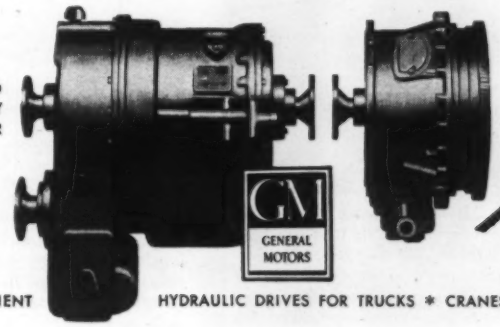
Allison Division of General Motors
Box 894E, Indianapolis 6, Indiana

ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

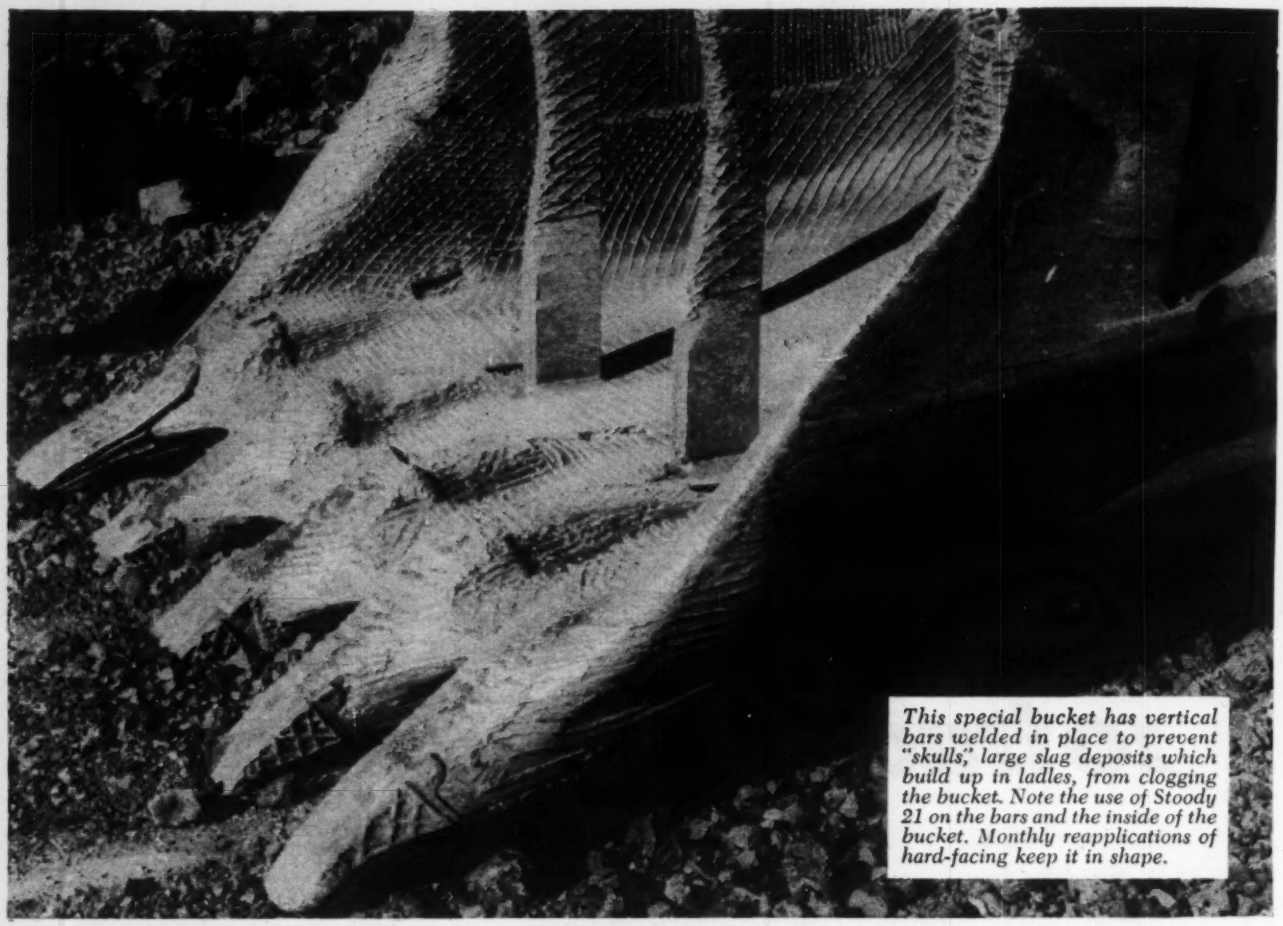
- **Quick-Shifts** at full throttle with finger-tip hydraulic control
- **Holds** power to load at all times – no clutch pedal to push—no gearshift guess
- **Reduces** maintenance costs by absorbing shock – eliminates engine lugging – prolongs equipment life
- **First** torque converter-transmission team designed to work as a *unit* and built by one manufacturer
- **Cuts** driver training costs

FIRST MATCHED UNITS BUILT BY ONE MANUFACTURER



Allison
TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR TRUCKS * CRANES * TRACTORS * SCRAPERS * SHOVELS * DRILLING RIGS



This special bucket has vertical bars welded in place to prevent "skulls," large slag deposits which build up in ladles, from clogging the bucket. Note the use of Stoody 21 on the bars and the inside of the bucket. Monthly reapplications of hard-facing keep it in shape.

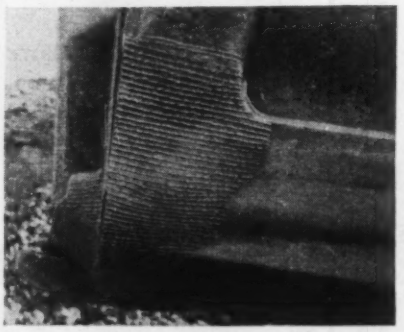
GETTING BETTER SERVICE FROM ALL TYPES OF BUCKETS

Down in Birmingham, Alabama, there is a company that really knows all about buckets—the Birmingham Slag Company. This organization is chiefly concerned with the reclamation of blast furnace slag which is crushed and treated for the production of an aggregate used primarily for road building. There are few materials more abrasive than this slag; ordinary buckets just can't take it without the protection afforded by extremely wear resistant hard-facing. This is true of all types of buckets used by Birmingham Slag Company... *special shovel buckets handling the "skulls," clam shells and scoop lifts.*

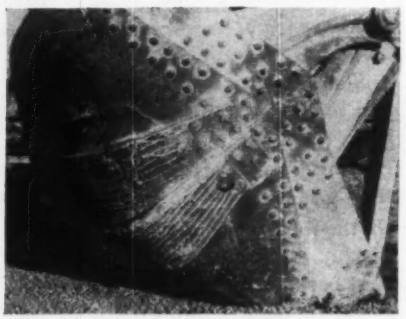
The pictures here pretty well tell the story. The company uses Stoody 21 liberally as shown in the illustrations to protect teeth, lips, sides and runners. As wear occurs, reapplications of Stoody 21 are made, as necessary, to keep the equipment in top operating condition.

Get complete details on the use of Stoody 21 and other Stoody alloys; you'll find them in the Stoody Guidebook, available from your dealer (consult the yellow pages of your telephone book)—or write to the company.

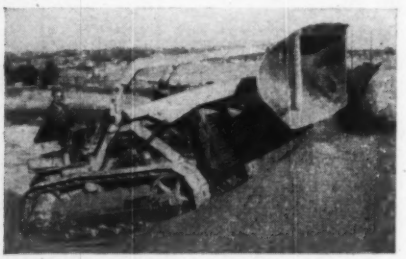
This latch plate also gets a Stoody 21 treatment to prevent wear.



These Stoody 21 beads across the bucket here resist severe abrasion as it is dragged across the rubble in the slag pit.



The lips on this clam shell are kept in good shape with beads of Stoody 21 for a tight seal.



The scoop lifts handling crushed aggregate lead a rough life; Stoody 21 keeps the lips, sides and bottom in condition. Occasional beads of this material are added as wear occurs.

STOODY COMPANY 11976 East Slauson Avenue, Whittier, California

(Continued from page 106)

▲ **Aaron Simon & Harry Taffel,** 477 Madison Ave., New York 22, N. Y. Owner Builds. $2,500,000. APARTMENT, 1260-1274 Second Ave., NEW YORK, N. Y. CD 1/10.

▲ **Olympia Park Homes,** c/o Bonded Realty Corp., Sunrise Hy., Lindenhurst, N. Y. Owner Builds. $1,000,000. 120 HOUSES, 35-acre tract, Grand Blvd., W. 18 St., east of Deer Park Ave., NORTH BABYLON, N. Y.

▲ **Sam Lefrak,** c/o George Miller, archt., 125 W. 45 St., New York 19, N. Y. Owner Builds. $1,500,000. 6 story APARTMENT, south side Austin St., east of Lefferts Blvd., RICHMOND HILL, N. Y. CD 1/28.

Boyd H. Kline, Berwick Rd., Bloomsburg, Pa., LB $903,175, general constr. secondary SCHOOL for Bald Eagle-Nittany Area Joint School Bd., MILL HALL, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Feb. 24. CD 1/26.

† **Baltimore Contractors, Inc.,** 711 S. Central Ave., Baltimore 2, Md. LB $639,462. fire control testing laboratory, Aberdeen Proving Grounds, ENG-18-020-55-34, ABERDEEN PROVING GROUND, MD. U. S. Eng., P.O. Box 1715, Baltimore 3, Md. Bids Feb. 18. CD 2/14.

Glen Arm Bldg. Co., c/o owner. CA Est. $920,000. 92 asbestos shingle DWELLINGS, west of BALTIMORE, MD. Edmondale Building Co., 5 N. Guilford Ave., Baltimore, 2, Md.

▲ **William Crow Constr. Co.,** 101 Park Ave., New York, N. Y. and **Harry Bart,** 210 E. Lexington St., Baltimore, Md. CA $9,000,000-$10,000,000 (jointly). SHOPPING CENTER, BALTIMORE, MD. Mondawin Shopping Center, Liberty Heights Ave. and Registertown Rd., Baltimore, Md. Bids Feb. 14. CD 2/8.

▲ **Jack Meyerhoff & Sons Co.,** 14 W. Saratoga St., Baltimore 1, Md. Owner Builds. $1,520,000. 304 brick DWELLINGS, Eastern Ave., near ESSEX, MD.

Joseph Nebel Co., 2142 P St. N.W., Wash., D. C., CA, $739,000. remodeling 7 story OFFICE, WASH., D. C. National Education Assoc., 1201 16 St. N.W., Wash., D. C. Joseph Saunders, 121 S. Columbus St., Alexandria, Va., archt. Awarded Feb. 18. CD 12/23/52.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Chincoteague**—GUARD STATION—BA 3/15—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, quard station and gate house, NATOS and Naval Air Station, NOY 86507. Spec. 45217. Plans deposit $10.

† **Va., Yorktown**—RAILROAD SIDINGS—BA 3/15—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk Zone 11, barricaded railroad sidings, Naval Mine Depot, NOY 85889, Spec. 43075. Plans deposit $30.

Va., Fredericksburg—BA 3/31—City, Levin J. Houston, Jr., mgr., City Hall, const. sewage treatment proj. Plans deposit $15. Whitman, Requardt & Assocs., 1304 St., Baltimore 2, Md., engrs. CD 2/12/53.

† **Ga., Macon**—SHOP—BA About 4/4—U.S. Eng. 200 E. St. Julian St., Savannah, shop addn. to aircraft maintenance hangar, Robins Air Force Base.

† **Tenn., Chattanooga**—WEATHER STATION—BA About 4/12—U.S. Eng., 200 East St. Julian St., Savannah, Ga. weather station, incl. 18 bldgs., two structural steel towers.

BIDS ASKED—BUILDINGS

Ga., Mount Vernon—SCHOOLS—BA 3/17—State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, elementary school (colored); elementary and high school (white); combination elementary and high school (colored). Plans deposit $50 each. Kuhlke & Wade, 16 Campbell Bldg., Augusta, archts.

Va., Alexandria—HOSPITAL—BA 3/21—Circle Terrace Hospital, 904 Circle Terrace, hospital alterations, addns. Plans deposit $25. Joseph Saunders, 121 S. Columbus St., archt.

Ky., Frankfort—AUDITORIUM, etc.—BA 3/24—City, Bd. Educ., auditorium-gymnasium. $244,000. Oberwarth & Livingston & Assoc., 321 Shelby St., archts. CD 1/24.

† **N. C., Fort Bragg**—OFFICERS QUARTERS—BA About 3/30—U. S. Eng., 308 Customhouse, Wilmington, 3 story, 39x204 ft. rigid frame concrete bldg., 60-man bachelor officers' quarters and related facilities, ENG-31-075-55-45. Plans deposit $14.40. CD 7/19/51.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

▲ **Va., Newport News**—ORE PIER—The Chesapeake & Ohio Ry. Co., L. T. Nuckols, ch. engr., 823 E. Main St., Richmond, Zone 10, soon lets contract, ore pier, $8,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

English Constr. Co., Alta-Vista, Va., CA $848,936. sewage disposal treatment plant and pumping stations, PETERSBURG, VA. City, Roy F. Ash, city mgr., City Hall, Petersburg, Va. Bids Jan. 27, awarded Feb. 22. CD 2/1, under LB.

NORTH CAROLINA—State Hy. and P. Wks. Comn., Raleigh,

Dickerson, Inc., Box 448, Monroe, N. C., LB $105,782, bridge and three rein.-con. box culverts, US 70 (reloc.), Proj. 2151, F-168 (11), Craven Co.; LB $98,418, est. $75,000-$100,000. bridge over Northeast Creek and two rein.-con. box culvert extens. NC 24, Proj. 3697. D-AD-F 3 (2), Onslow Co.;

Claude C. Wheeler, Inc., Box 602, Oxford, N. C., LB $434,897, est. $400,000-$500,000, structures on 10.24 mi. US 1 (reloc.), Proj. 4734, SF-175 (5). SF-701 (1), Vance Co.;

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Berger Metal Culvert Co.
Westminster Station, Vt.

The Boardman Co.
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Tulsa, Okla.

Choctaw, Inc.
Memphis, Tenn.
Little Rock, Ark.
Jackson, Miss.
Birmingham, Ala.

Eaton Metal Products Corp.
Omaha, Neb.

Eaton Metal Products Co.
Billings, Mont.

Eaton Metal Products Corp.
Hutchinson, Kan.

Equipment Distributors, Inc.
Charleston, W. Va.

Felker Brothers Mfg. Co.
Marshfield, Wis.

H. V. Johnston Culvert Co.
Aberdeen, S. D.

H. V. Johnston Culvert Co.
Minneapolis, Minn.

Lane-Penncarva Pipe Corp.
Bealeton, Va.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
Fargo, N. D.

Ken Smith Machinery Co., Inc.
Albany, N. Y.

Thompson Pipe & Steel Co.
Denver, Colo.

Utah Culvert Co.
Ogden, Utah

Wyatt Metal and Boiler Works
Dallas, Texas

F. Yeager Bridge & Culvert Co.
Port Huron, Mich.

Young & Greenawalt Co.
East Chicago, Ind.

George R. Workman Co.
Frankfort, Ky.

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The Outstanding Steel Tape for On-the-Job Durability

The Lufkin "Leader" Steel Tape is **Chrome Clad** — many times more durable because the fine steel line is built up by Lufkin's exclusive process with a series of electro-platings. These platings strengthen the line, make it resistant to rust and corrosion, and protect the jet black markings that are easy-to-read against the satin chrome-white background. Line won't chip, peel or crack. Metal case is rust resistant coated, covered with durable maroon vinyl. Available in 25', 50', 75' and 100' lengths. Choice of standard or folding hook ring. Get more for your money — get the Lufkin Leader.

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BUY LUFKIN TAPES — RULES — PRECISION TOOLS From Your Supply House
THE LUFKIN RULE CO., SAGINAW, MICH. — New York City — Barrie, Ont.

Sound Powered TELEPHONES work in any emergency

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If everything else fails, these phones will still provide trouble-free performance over a distance of many miles. Speaking is activated solely by the sound energy of the voice while ringing is accomplished by a hand-driven magneto. For permanent installation on industrial projects or for temporary use on construction work where they can be moved as the job progresses.

INDOOR AND OUTDOOR MODELS

In selective or common ringing and semi-selective or common talking. Cost of upkeep is negligible.

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DRILLING CONTRACTORS

Diamond and Shot Core Borings
Dry Sample Borings
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Foundation Testing for Bridges, Dams and other Heavy Structures

Manufacturers, also of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits. Ask for Bulletin 320.

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29 Special and exclusive features of design and construction result in assured accuracy—ease and convenience in handling — lower maintenance costs — longer instrument life — time and money saved in use. All these, plus — a lower price and direct shipment from the Factory assures— THE GREATEST VALUE FOR DOLLAR OF INVESTMENT

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WARREN-KNIGHT
136 NORTH 12TH STREET PHILADELPHIA 7, PA.

John H. Brinkley, Thomasville, N. C., LB **$100,074,** est. $100,000-$125,000, structures on 7.84 mi. Proj. 8-452, S-651 (3), Watauga Co.;

Crowder Constr. Co., Inc., 1123 E. 10 St., Charlotte, N. C., LB **$106,860,** est. $100,000-$125,000, structures on 9.58 mi. US 21 (reloc.), Proj. 6538, SF-550 (6), Mecklenburg Co. Bids Feb. 22. CD 2/11.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn. Raleigh,

Nello L. Teer Co., Durham, N. C., LB **$626,607,** est. $400,000-$500,000. subgrade reinf. CABC and c. conc. 9.16 mi. US 301 (reloc.), Proj. 1619, Nash Co.;

Columbus Contrs., Whiteville, N. C., LB **$121,454,** est. $100,000-$125,000, STBC, b. conc. binder and surf., structures 0.549 mi. NC 87, Proj. 3-253, S-141 (4), Cumberland Co.;

Johnson & Geddes, Box 3217, Fayetteville, N. C., LB **$277,135,** est. $300,000-$400,000 STBC, sand asph. base and b. conc. surf. class I. 14.85 mi. NC 71, Proj. 3855. S-466 (2). BS 6-6-46-196, Robeson Co.; LB **$114,655,** est. $100,000-$125,000. b. conc. binder and surf., Class H & I. 22.9 mi. US 701, NC 24. Proj. BS 3-6-28-156, Sampson Co.;

F. D. Cline Paving Co., Box 349, Raleigh, N. C., LB **$116,062,** est. $100,000-$125,000, b. conc. binder and surf., Class H & I. 7.48 mi. US 158, Proj. 4723, F-668 (4), Granville and Vance Counties; LB **$135,-131,** est. $125,000-$150,000. b. conc. binder and surf. Class H & I. 10.29 mi. NC 95, Proj. BS 4-6-32-153, Code 5900-431, Nash Co.;

J. C. Critcher, Inc., Box 39, Ashville, N. C., LB **$288,-682,** est. $300,000-$400,000, grading 10.24 mi. US 1 (reloc.). Proj. 4734, SF-175 (5). SF-701 (1), Vance Co.;

Rea Constr. Co., Box 2015, Charlotte, N. C., LB **$89,-604,** est. $75,000-$100,000. b. conc. binder and surf., Class H & I 3.83 mi. NC 7, Proj. 6307. S-172 (3), Gaston Co.;

Taylor Constr. Co., Box 5220, Biltmore Station, Asheville, N. C., LB **$478,233,** est. $400,000-$500,000, CABC, bit. surf. tr. 7.84 mi. Proj. 8-452. S-541 (3), Watauga Co.;

Thompson—Arthur Paving Co., Box 1197, Greensboro, N. C. LB **$313,935,** est. $300,000-$400,000, SABC and bit. surf. tr. 9.96 mi. US 21, Proj. 6398, F-550 (7), F-436 (4), Mecklenburg and Iredell Counties; LB **$120,544,** est. $125,000-$150,000. b. conc. binder and surf., Class H & I. 8.46 mi. NC 54, 62 and 87. Proj. BS 7-6-47-166, Alamance Co.;

Blankenship Bros., Box 3150, Charlotte, N. C., LB **$160,-661,** est. $175,000-$200,000, grading 9.58 mi. US 21 (reloc.), Proj. 6538, SF-6 550 (6), Mecklenburg Co.;

Blythe Bros. Co., Box 989, Charlotte 1, N. C., LB **$379,259,** est. $400,000-$500,000. b. conc. surf., Class I, 42.23 mi. US 74, NC 200, Proj. BS 10-6-67-108, BS 10-6-69-155. BS 10-6-69-156. Code 5900-1003. Code 5900-1015, Mecklenburg and Union Counties;

Gilbert Eng. Co., Statesville, N. C., LB **$97,567,** est. $100,000-$125,000. b. conc. surf. course, Type F-2, 39.1 mi. Proj. BS 12-7-79-40. BS 12-7-83-21, Catawba and Lincoln Counties;

White Constr. Co., Box 395, Kinston, N. C., LB **$133,-528,** est. $125,000-$150,000. sand asph. base and b. conc. surf., Class I. 10.7 mi. US 17, NC 33. Proj. BS 2-6-15-125. Code 5900-248, Beaufort Co.;

E. B. Towles Constr. Co., Inc., Box 1617, Wilmington, N. C., LB **$95,118,** est. $75,000-$100,000. b. conc. surf. course, Class I. 16.6 mi. US 421, NC 210, Proj. BS 3-6-27-143. BS 3-6-27-144, Pender Co. Bids Feb. 22. CD 2/11.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Faulk & Coleman Constr. Co., Woodville Hy. Tallahassee, Fla., LB **$116,527,** sand-asph hot mix, with mineral seal coat 21.274 mi. State Rd. 10, F-006-2 (10), Walton Co.;

W. L. Cobb Constr. Co., Box 977, Tampa, Fla., LB, **$178,526** rock base, b. conc. surf. with binder, storm sewers, curb, gutter, maint. traffic 0.911 mi. State Rd. 15, F 021-1 (15) Job 7905-203, Volusia Co.;

W. H. Armstrong Co., Inc., Dunedin, Fla., LB **$299,113,** rock base, type 2 surf., 2 concrete box culverts of bridge length, small drainage structures 7.467 mi. State Road 70, Fed. Aid Proj. S-269 (3), Jobs 1305-201 and 0404-350, Manatee and De Soto Counties;

J. D. Manly Constr. Co., Leesburg, Fla., LB, **$78,955,** limerock stab. base with surf. 5.212 mi. State Road S-634, Job 0657-151, Hardee Co.;

Coggin & Deermont, Chipley, Fla., LB **$137,566,** limerock stab. base, type 2 surf. to triple 10x9 ft, concrete box culvert, 180 ft. concrete slab bridge on composite concrete, steel pile bents 4.058 mi. State Rds. S-356, S-361 and S-361-A, Jobs 3850-151, 3853-152, 3854-15 and 3858-151, Taylor Co.;

R. H. Wright & Son, Box 781, Fort Lauderdale, Fla., LB, **$871,694,** embankment rock base, Type 1a surf., tr., b. conc., storm sewers 2.744 mi. State Road A-1-A, Job 8618-177, Broward Co. Bids Feb. 25. CD 2/14.

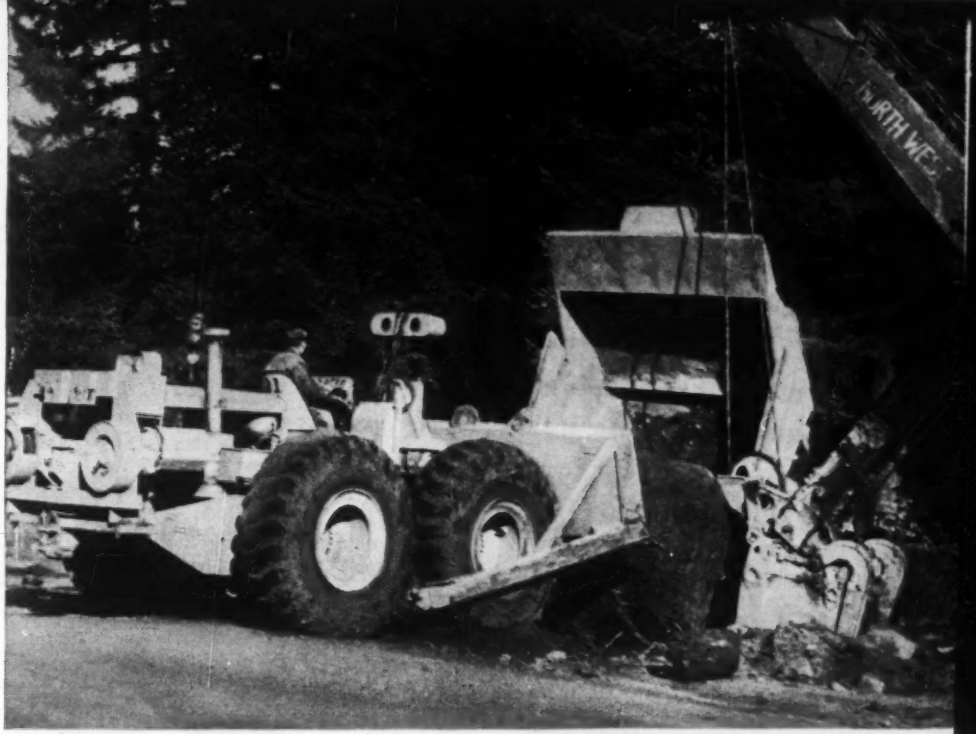
MISSISSIPPI—State Hy. Dept., **T. C.** Robbins, dir., Jackson,
rejected bids Feb. 22, base, double bit. surf. tr. 2.94 mi. Miss. Hy. No. 315 between Water Valley and Miss. Hy. No. 6, S 0866 (3) A, Yalobusha and Lafayette Counties. CD 2/11.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

J. W. Snowden & S. K. Jones, Hattiesburg, Miss. CA **$722,096,** est. $880,000. grade, culverts, bridges 12.047 mi. U. S. Hy. No. 80 between Bovina and Bolton, FI I IN-004-1 (17), Warren and Hinds Counties;

Ferguson Bros., Greenwood, Miss. CA **$97,795.** double bit. surf. tr. 4.053 mi. Miss. Hy. No. 315 between Water Valley and Paris, SP 315-2474 (5), Yalobusha Co.;

(Continued on page 112)



Tournatractor and shovel position and hold giant boulder while electric hoist brings back Rear-Dump body to haul position. Big low-pressure tires of tractor do no damage to existing pavement. Dozer's high blade lift (54") and fast positioning help speed loading.

How Contractor Heintz beat the boulder problem...

On toughest section of Portland-Salem Expressway, extensive beds of 3 to 6-yd. boulders removed by combination of tractor, rear-dumps, and shovel

"You have the toughest section of all..."

R. A. Heintz Construction Company, Portland, Oregon, heard that phrase often during their work on 6.9 miles of the Portland-Salem Expressway between Boone's Ferry Road and the Willamette River.

Not that the grading in their $663,000 contract for turning 2 lanes of existing highway into 4 lanes of expressway involved much dirt. It didn't. Only 200,000 yards, with most cuts less than 5 ft. deep.

But in many places extensive beds of boulders had to be moved. These averaged 3 cubic yards to 6 cubic yards and 12,000 lbs. to 24,000 lbs. each. The "awkward" size. Too big for most shovels to handle alone. Too small to blast economically.

A real problem!

How would you lick it?

Contractor Heintz's solution was to team his two 16-ton LeTourneau-Westinghouse Rear-Dumps with a rubber-tired Tournatractor and a 2½-yd. shovel. As each of the many big boulders was reached, tractor and shovel lifted together, the tractor bracing the rock tightly against the shovel bucket. Meanwhile, one of the Rear-Dumps backed as close to the boulder as possible, its bowl in dump position to minimize lift required. Shovel and tractor teamed up to place and hold each boulder against the Rear-Dump bed. Rear-Dump operator then lowered bowl while shovel and dozer operators followed lift of rear-end to keep load from rolling out. As soon as body reached haul position, Rear-Dump drove away either to waste dump or deep fill where its electric-controlled dump and great strength of the 3 layer, all-steel body made it easy to roll the big boulders out of the bowl and safely over the edge of the fill.

Despite difficult loading, output averaged remarkably high. On one 4000' cycle, where haulers dumped on approach to the Willamette River bridge, each Rear-Dump delivered a load every 10 minutes. Production per unit per 50-minute hour averaged 5 loads (60 to 80 tons).

LeTourneau-Westinghouse equipment can pay off on your tough jobs, too. Let us prove it to you by showing you the machine in action.

Tournatractor—Trademark RT-619-Hb

LeTourneau-Westinghouse Company

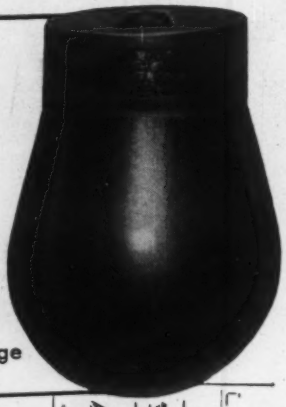
PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Frederick

CAST SEMI-STEEL

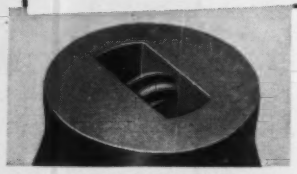
BALLS



Your low cost production tool for

■ wrecking old buildings ■ smashing scrap metal

■ smashing old paving ■ secondary quarry breakage



Exclusive E-Z SWING steel eye, deeply imbedded in ball, gives better control; more cable protection. Special Release Hooks for "free dropping" also available.

Tough and rugged, they're made to stand abuse without maintenance cost. Made in sizes to suit your needs. Prompt shipment F. O. B. Frederick, Md., from stock. Write today for free illustrated literature and prices on Frederick Balls and Weights that save your production costs.

SIZES AND WEIGHTS SHIPPED FROM STOCK		
500 lbs. (ball-shaped)	2000 lbs. (ball-shaped)	5200 lbs.
1000 lbs.	3300 lbs.	6500 lbs.
1500 lbs.	4000 lbs.	8000 lbs.

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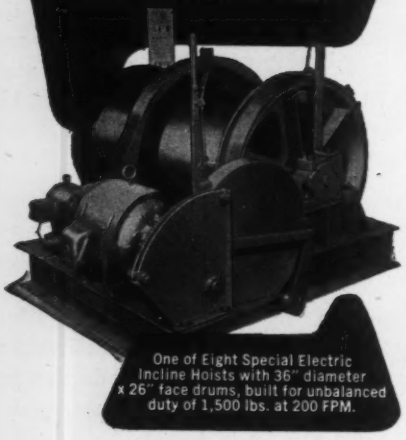
• STORM GRATINGS • METER FRAMES AND COVERS
• CENTRIFUGAL PUMPS • GRAY IRON CASTINGS

FREDERICK IRON & STEEL, INC.
FREDERICK, MARYLAND

Special Hoists
FROM STANDARD PARTS



One of Eight Special Electric Incline Hoists with 36" diameter x 26" face drums, built for unbalanced duty of 1,500 lbs. at 200 FPM.

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for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

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ENTERPRISE GALVANIZING CO.
2517 E. CUMBERLAND ST. • PHILADELPHIA 25, PA.

(Continued from page 110)

Lee Constr. Co., Hattiesburg, Miss. CA **$285,670,** est. $323,000, grade, culvert, bridges 5.343 mi. Miss. Hy. No. 27 between Rockport and Georgetown, F 054-1 (4), Copiah Co.;

S. L. Reed, Belzoni, Miss. CA **$254,775,** est. $295,000. grade, culverts 9.467 mi. Miss. Hy No. 432, between Pickens and Benton, S 0512 (2) A, Yazoo Co.;

Marion Constr. Co., Columbia, Miss. CA **$116,274,** est. $144,000. grade, culverts, box bridge and bridge, 6.078 mi. Miss. Hy. No. 44 between Columbia and Sumrall, SP 44-7474 (5), Marion Co.; CA **$103,373,** est. $127,000. grade 4.984 mi., and bridge on Miss Hy. No. 63 between Waynesboro and Leakesville, SP 63-6474 (2), Wayne Co.;

Newsom Brothers, Columbia, Miss. CA **$126,917,** est. $155,000, double bit. surf. tr. 0.269 mi. Miss Hy. No. 14 and 35 between Carthage and Kosciusko, F 023-2 (6), Attala Co.;

Talbert & Brown, 19 22 Ave. S., Meridian, Miss. CA **$106,280,** est. $130,000. double bit. surf. tr. 13.541 mi. Miss. Hy. No. 27 between Tylertown and Monticello, F 054-1 (2), Lawrence Co.;

Worsham Brothers, Corinth, Miss. CA **$422,339,** est. $535,000 grav. surf. course 14.500 mi. Miss. Hy. No. 9 between Pontotoc and Bruce, F 050-1 (3), Pontotoc Co.;

John H. Moon & Son, Ridgeland, Miss. CA **$294,100.** est. $286,000. grade 5.866 mi. and bridges on Miss. Hy. No. 13 between Mendenhall and Puckett, F 037-1 (1), Simpson Co. Grand total $2,534,618. Bids Feb. 22, awarded Feb. 23. CD 2/11.

A. M. Muterbaugh, Box 1540, Lake Charles, La CA **$314,115.** 45,000 lin. ft. 8- to 24-in. sanitary sewer, appurtenances, Contr. 5, 79,000 lin. ft. 8 to 15 in. sanitary sewer, appurtenances, LAKE CHARLES, LA. First Sewerage Dist., Lake Charles, La. Bids Feb. 15, awarded Feb. 16. CD 1/31.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

R. B. Tyler Co., 1446 Levering St., Louisville, Ky. LB **$599,839.** b. conc. surf. Class I 1.588 mi., Paducah Belt Line Rd., U 58 (10), SP 73-32 McCracken Co.

The Allen Co. Inc., Winchester, Ky. LB **$130,654.** b. conc. surf. Class I 0.185 mi., New Castle-Carrollton to Ky. 55 Rd., S 552 (1), SG 552 (2), SP 52-7, Henry Co.

J. C. Codell Co., Winchester, Ky. LB **$195,318.** b. conc. surf. Class I 1.723 mi. Vanceburg-Maysville Rd., S 141 (2), SP 68-114, Lewis Co.,

R. R. Dawson Bridge Co., Bloomfield, Ky. LB **$81,264.** reconstr. traffic bound limestone 3.498 mi. Owens Rd., RS 104-518, Russell Co.,

Greer Bros. & Young, London, Ky. LB **$125,979.** traffic bound limestone 4.002 mi. Ulvah-Line Fork Rd., S 548 (1), RS 67-599, Letcher Co.,

Kik Constr. Co. Inc., Murray, Ky. LB **$97,344.** c. conc. 0.198 mi. Madisonville-Sacramento Rd., FG 183 (9), SP 54-120, Hopkins Co.,

Lyons & Breeden, Rogersville, Tenn., LB **$245,018.** b. conc. surf. Class I c. conc. 2.719 mi. Madisonville-Hopkinsville Rd., F 122 (3), F 41 (12), SP 54-180, Hopkins Co.,

Winston Ford Co., Prestonsburg, Ky. LB **$236,582.** grade, drain 7.04 mi. Meta-Kimper Rd., S 20 (4), SP 98-623, Pike Co.,

C. D. Juett, Winchester, Ky. LB **$114,117.** b. conc. surf. Class I 0.169 mi. Bypro-Wheelwright Rd., S 352 (5), SP 36-96, Floyd Co.,

Kentucky Road Oiling Co., Frankfort Ky. and **Licking River Limestone Co.,** West Liberty, Ky. LB **$480,966.** traffic bound slag 7.217 mi. Auxier-Van Lear Rd., S 211 (1), SP 58-357, Floyd and Johnson Counties; LB **$216,037,** traffic bound limestone 5.339 mi. Paris-Mount Sterling Rd., S 67 (2), S 67 (3) SP 9-79, 87-137, Bourbon and Montgomery Counties. Bids Feb. 18. CD 2/2.

BUILDINGS

LOW BIDS AND CONTRACTS

Joseph F. Nebel Co., 3408 Wisconsin Ave. N.W., Wash., D. C., CA **$953,352.** STORE addn., ARLINGTON, VA. Sears Roebuck & Co., 4640 Roosevelt Blvd., Phila., Pa.

† **Gunnell Constr. Co.,** Tower Bldg., Wash., D. C. LB, **$345,000** Base Bid No. 1, CENTRAL BOILER PLANT addn. underground steam distr. sys., ENG-49-080-55-36 (35) FORT BELVOIR, VA. U. S. Eng., 1 and Douglas Sts. N.W., Wash., 25, D.C. Bids Feb. 15. CD 1/20.

C. W. Blanchard, 6 State St., Charleston, S.C., LB **$365,672.** 100-unit TOURIST COURT, CHARLESTON, S. C. Castle Pinckney, Inc.; Irving Steinberg, pres., 61 Broad St., Charleston, S. C. Milton Abrams, 10 Broad St., Charleston, S. C., archt.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C. CA. 44,000 sq. ft. CARPET MILLS addns., GREENVILLE, S. C.: Belrug Mills, Inc., 148 River St., Greenville, S. C. Palmetto Assocs. Architects & Engineers, 8 S. Church St., Greenville, S. C., engrs.-archts. CD 2/25.

Jones & Hardy, Montevallo, Ala., LB **$667,229.** Consolidated Negro SCHOOL for Barnesville, CLASSROOM BLDG. for Barnesville Grammar School, CONSOLIDATED SCHOOL for Milner, GEORGIA State School Bldg. Auth., 41 Exchange Pl. S. E., Atlanta, Ga. Bids Feb. 24. CD 1/25.

▲ **A. R. Briggs Constr. Co.,** 526 Arch St., Macon, Ga., CA, **$1,435,900** Athens High and Industrial SCHOOL, Northside elementary SCHOOL; W. Broad St. Elementary SCHOOL addn., David Barrow Elementary SCHOOL addn., Childs St. Elementary SCHOOL addn., College Ave. Elementary SCHOOL addn., Oconee St. Elementary SCHOOL addn., New Athens High SCHOOL addn., ATHENS, GA. State School Bldg. Auth., 41 Exchange Pl., S.E., Atlanta, Ga. Bids Feb. 8. CD 2/21, under LB.

(Continued on page 114)

Push-loads 12½ yds. in ⅔ min.

Equipped for earning extra profits, this Tournatractor has bulldozer and down-pressure on front . . . 2-drum electric PCU on rear for hookup to contractors' Carryalls, Rooter, Rollers. Tournatractor shown has 186 hp . . . present production models have 208 hp.

Tournatractor delivers fast pusher service on 1,034,000-yd. highway relocation job

Adrian Schweitzer, Osborne, Kansas, had 1,034,000 cu. yds. of clay, sand, and rock to move on relocation of 16½ miles of State Route 18 in Russell County, central Kansas. Half of this yardage was assigned to three 7-year-old Super C Tournapulls, half to three crawler-drawn FP Carryalls. A LeTourneau-Westinghouse 186 hp Tournatractor, used as a pusher, kept the 3 crawler-scraper rigs "humping" on short hauls. Here's the record:

Makes contact every 1-1/6 minutes

With its instant speed selection and torque converter, Tournatractor made smooth pusher contact. 186 hp push put 12½ pay yards of clay and loam into each scraper bowl in 100 ft. Loading time averaged 40 seconds. Complete pushing cycle — including load, backup, and spot for next contact — averaged 1 minute 10 seconds. Men on the job also say that at times they have averaged push cycles of only 55 seconds.

That's typical pusher performance for this mobile, quick-maneuvering tractor. There's plenty of loading power and ground-grip traction in its big 21:00 x 25 low-pressure tires. It steps smoothly into any of 4 fast forward gears, or 2 reverse at the flick of a speed selector lever. No foot clutching, no stops for shifting.

Drives 30 miles in 2 hours

Contractor Schweitzer's Tournatractor drove 30 miles from highway construction at Lincoln, Kansas, to this job near Luray in 2 hours . . . averaged 15 mph through town and highway traffic. With top speed of 19 mph, it's easy to see why Tournatractor runs fast from one job to the next . . . makes quick on-the-job moves . . . gets more work done wherever pushing, pulling, and dozing power is needed.

Take a tip from Mr. Schweitzer . . . "Tournatractor," he says, "makes it easier to plan your work. It can do your odd jobs in a hurry. It's a very flexible tool."

Ask us to show you Tournatractor in action so you can judge for yourself. Call to arrange time and place.

Filling around large culvert, Tournatractor dozes 2½ pay yds. per push. "Unit compacts well around structures," says Owner Schweitzer. "It's good also for dozing on culvert wing extensions. You can level out easily because of close mounting of dozer blade. Tournatractor enables a contractor to be more flexible and makes it easier to plan his work. Tournatractor is capable of doing the odd jobs that need to be done in a hurry."

Performance earns repeat orders

Schweitzer bought his first Carryalls in 1936 . . . started his Tournapull fleet in 1946 . . . bought his first Tournatractor in 1953. On job shown, 3 of his Tournapulls and 3 FP Scrapers, loaded by Tournatractor-pusher and a snatch-tractor, moved 500,034 cu. yds. of clay, rock, and sand in 80 days. Mechanical efficiency of Tournatractor was 97%.

Tournapull, Carryall, Rooter—Trademark Reg. U.S. Pat. Off.
Tournatractor—Trademark PT-687-H-b

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WHITE GIVES YOU greater, longer-lasting precision–

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. . . yet costs less than other quality engineers' transits

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For example: White uses a recently-developed Swiss Dividing Engine to cut graduations into solid silver. This insures super-precision from the beginning, safeguards it through more years of hard field usage.

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We offer expert REPAIR SERVICE on all makes, all types of instruments.

(Continued from page 112)

▲ **Henry C. Beck Co.,** First Natl. Bank Bldg., Atlanta, Ga., CA, **$1,000,000,** 9 story STORE and GARAGE FACILITIES, Peachtree and Cain Sts., ATLANTA, GA. Ballard Troutman, Inc., Georgia Savings Bank Bldg., Atlanta, Ga. Lane Bryant, Inc., New York, N. Y. lessee.

▲ **Georgia Southern Constr. Co.,** 300 Vineville Ave., Macon, Ga., CA, **$1,526,407,** Brewton-Condor Elementary High SCHOOL; Wilkes Elementary SCHOOL mechanical remodeling; Cadwell Elementary SCHOOL addn.; Dexter Elementary SCHOOL addn., Consolidated Negro SCHOOL (Millville area); Negro SCHOOL (Fleming-Mary Grove Area); Consolidated Negro SCHOOL (Brewton Area), DUBLIN, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Feb. 10. CD 2/21, under LB.

A. B. Newton, Vidalia, Ga., CA, **$589,900,** Putnam County High SCHOOL addn. (white); Putnam County Elementary and High SCHOOL (colored); Eatontown Elementary SCHOOL (white), EATONTOWN, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Feb. 1. CD 2/21, under LB.

McAnulty, Inc., 878 12 St., P. O. Box 240, Bradenton, Fla., CA, **$758,917,** Junior High SCHOOL, BRADENTON, FLA. Bd. P. Instruction, Supt. Office, Manatee Co., Bradenton, Fla. Norman F. Six, Hillsboro Hotel Lobby, Tampa, Fla., archt. Awarded Feb. 23.

Kenad Constr. Co., 972 E. 25 St., Hialeah, Fla., CA, **$520,000,** 52 RESIDENCES, HIALEAH, FLA. Adken Land Co., 972 E. 25 St., Hialeah, Fla. R. J. Schneider, 1234 S. E. 8 Ave., Hialeah, Fla. Awarded Feb. 23.

King Constr. Co., Texas National Bank Bldg., Texarkana, Tex. CA **$647,173.** two girls DORMITORIES at Grambling College, GRAMBLING, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Feb. 17, awarded Feb. 23. CD 1/31.

Bartley, Inc., Box 344, Lake Charles, La. CA **$647,413.** 3 story, 38,000 sq. ft. brick steel frame SCIENCE BLDG., at McNeese State College, LAKE CHARLES, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Feb. 17. CD 1/26.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ind., New Albany—SCHOOL—BA 3/17—New Albany Bd. Educ., New Albany, Green Valley Elementary School. $350,000. Hawkins & Walker, Elsby Bldg., archts. CD 2/24, under LB.

▲ **Ill., Chicago**—SCHOOL—BA 4/1—Bd. of Educ., 221 N. La Salle St., Zone 1, Dunbar Vocational School $5,000,000. Holabird, Root & Burgee, 180 N. Wabash St., Zone 1, archts. CD 3/15/51.

▲ **Mich., Detroit**—PARKING GARAGE—BA 4/12—City, Municipal Parking Auth., 1214 Griswold St., parking garage, Civic Auditorium, $1,575,000, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York, N. Y., engrs. M. F. Wagnitz, city engr. CD 12/3.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., Chicago**—APARTMENT—American National Bank & Trust Co., 33 N. La Salle St., soon lets contract. 250-unit apartment, 401 Oakdale Ave. $4,000,000. Lowenberg & Lowenburg, 111 W. Monroe St., Zone 3, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Great Lakes Dredge & Dock Co.,** 1630 Williamson Bldg., Cleveland 14, O., CA **$377,520,** maintenance dredging Cuyahoga and Old Rivers, Cleveland Harbor, OHIO. U. S. Eng., Engineer Park, Buffalo 7, N. Y. Bids Feb. 4. CD 1/26.

Speedway Contg. Co., 6001 N. 91 St., Milwaukee, Wis., LB, **$397,585,** main sanitary sewer in Brown Deer Rd., Regent Rd., Santa Monica Blvd., Bayside, MILWAUKEE, WIS. Metropolitan Sanitary Sewerage Comn. of Milwaukee Co., Jones Island, Milwaukee, Wis. Bids Feb. 18. CD 2/8.

R-W Constr. Co., 33140 W. Fond du Lac Ave., Milwaukee, Wis., CA, **$79,129,** sewer in N. 35 St., MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Feb. 17, awarded Feb. 18. CD 2/14.

Denton Constr. Co., 20415 Mack Ave., Grosse Pointe Woods 26, Mich. CA **$132,819.** SAD 626 6,812 sq. yd. c. conc., SAD 625 18,680 sq. yd. c. conc., DEARBORN, MICH. City, Myron A. Stevens, city clk., Schaefer Rd., Dearborn, Mich. Bids Jan. 31, awarded Feb. 8.

BUILDINGS

LOW BIDS AND CONTRACTS

Schrand, Inc., 2921 Losantiville Rd., Cincinnati, O. Owner Builds. **$850,000.** 50 one story, bsmnt. brick HOMES, off Hunt Rd., BLUE ASH, O. Wilkens, Schrand & Wilkens, Union Terminal Bldg., Cincinnati, O., archts. James Wald & Assoc., 1721 Dallas Ave., Cincinnati, O., engrs. Awarded Feb. 21.

Knowlton Constr. Co., 106 N. Main St., Bellefontaine, O. CA **$644,400,** general constr. and electric for 15-classroom HIGH SCHOOL, FRANKLIN, O. Franklin Local School Dist., Franklin, O. CD 7/26.

J & E Warm Co., 2335 Florence St., Cincinnati, O. CA Est. **$500,000.** 1 story lithographing PLANT, 32-acres site, LEBANON, O. R. A. Taylor Co., 1917 Vine St., Cincinnati, O. Awarded Feb. 23. CD 2/10.

Modernage Homes, Inc., 426 Knox St., Gary, Ind. Own Forces, **$900,000.** 52 HOMES, Ash Pl. and Miller Ave. GARY, IND. David Katz, 355 Arthur St., Gary, archt.

Comet Constr. Co., 1848 N. Milwaukee Ave., Chicago, Ill., CA **$800,000.** 60-unit APARTMENT, California and Lunt Aves., CHICAGO, ILL. Deer Park Bldg. Corp., 3453 W. Montrose St., Chicago, Ill. Bids Jan. 14, awarded Feb. 16. CD 1/12.

(Continued on page 116)

In one 10-hour day, Yonkers' 10 C Tournapulls moved 861 loads (14 pay yards each, on a 2,000′ one-way haul over a soft road that included a 25% adverse grade on return. That's total of 12,054 cubic yards! On average days, same haul distance, same fleet moved about 11,000 yards. Says Foreman Fred Vigue, "Tournapulls give this continually high production because of their speed, the big loads they carry, and their exceptional maneuverability."

RAIN 97 days out of 154

fails to stop rubber-tired earthmovers on Maine Turnpike

TO help move 3,000,000 yards of clay, rock, sand and gravel for the Maine Turnpike Extension near Lewiston, Yonkers Contracting Company, Yonkers, New York, brought in a rubber-tired fleet of 10 electric-control C Tournapulls and 2 Tournatractors.

Grading their 10.83-mile section of highway involved cuts up to 55 feet deep; fills up to 38 feet. Over 1,460,000 cubic yards of clay (including some extremely tough blue clay) had to be excavated. 1,440,000 yards of selected sand and gravel borrow had to be brought in. 100,000 yards of rock had to be blasted and moved away.

Under normal conditions, the $2,120,909 contract would have been a routine, though large, dirtmoving job. But conditions were far from normal! Right from the start, work was hampered by heavy rains.

97 days of rain, 2 hurricanes

For more than 70 years, rainfall here from May to September has averaged 16 inches. But not this year! During these five months, Maine received over 30 inches of rain. Out of 154 scheduled working days, it rained on 97 days. Rarely did the dirt have a chance to dry out.

The crowning misfortunes came when hurricanes "Carol" and "Edna" blew right through the job within 10 days of each other. "Carol" alone yielded 3 inches of rain in less than 2 hours.

What men on the job say:

In spite of the constant rains, Yonkers, working 80 to 120 hours a week, moved about 45% of the total yardage during the first five months. Everyone on the job was very happy with the way Tournapulls worked in slippery footing. One company official said, *"Tournapulls have done work no other equipment could have done."* Exclusive power-proportioning differential kept "C's" from getting stuck by automatically transferring drive power from one wheel to another to take advantage of the best footing.

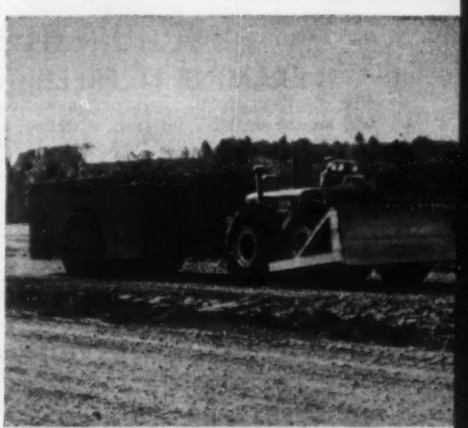
Some typical production figures

When job was visited, 5 of the 10 sideboarded Tournapulls were hauling three miles one-way to spread sand and gravel backfill around a culvert excavation. Despite slowdown to blade haul-route on return trip, each Tournapull completed a 6-mile cycle every 25 minutes. Loads averaged 14 pay yards.

At another location, 5 other "C's" were hauling 14 pay yard loads of sticky blue clay 1300′ to 1500′ down 6% grade to spread on the roadbed. Job records covering this operation show each Tournapull averaged a 3000′ cycle every 7½ minutes. Load time averaged 45 seconds; dump time, 20 seconds; haul and return speed averaged 8 mph.

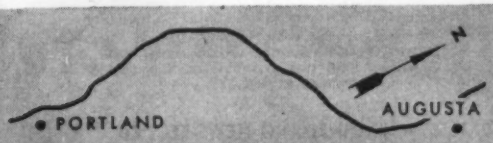
Ask for more information

If your next job involves mud or other uncertain footing, better check Tournapulls. We will be glad to show you owner-verified production figures on work similar to yours. Or, if you would prefer to see Tournapulls in action, call to arrange a demonstration.



Tournatractor speed, power and ability to work over soft fill were money-saving advantages in towing of this 50-ton compactor. In its spare time, rubber-tired unit travels all over the job at speeds to 19 mph to handle small clean-up assignments. Yonkers' second Tournatractor pushes the loader . . . cleans the pit . . . pushes stuck trucks . . . builds and maintains haul roads.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark PT-748-H-b



This 63-mile extension to the present Maine Turnpike will connect Maine's largest city, [illegible] Contracts for grading, bridges, and steel, already awarded by the Turnpike Authority, total more than $32,000,000. Nine separate grading contracts specify moving of 18,145,000 yards of dirt. The entire expressway will be paved with a 3-inch bituminous concrete surface on a 4-inch macadam base. This will be laid on a 12-inch gravel base which will, in turn, be set on 20 inches of selected sub-base.

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▶EXPLAINS the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portable bracing.

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(Continued from page 114)

Bulley & Andrews, 1755 W. Armitage St., Chicago, Ill., CA, $110,000. FACTORY, adjacent to main plant, CHICAGO, ILL. Harper Wyman Mfg. Co., 8540 Vincennes St., Chicago, Ill. Ralph E. Stoetzel, 111 W. Monroe St., Chicago 3, Ill., archt. Awarded Feb. 15.

▲ **Erie Constr. Corp.,** 6283 Archer Ave., Chicago, Ill., Own Forces, $1,900,000, 170 HOMES, southwestern part of CHICAGO, ILL. John Bartolomeo, 10836 S. Western St., Chicago, Ill., archt.

Andreas Bros., 3711 W. 25 St., Chicago, Ill., CA $350,000 50-unit HOTEL, 4832 W. 55 St., across street from Midway Airport, CHICAGO, ILL. Michael Caffarello, 577 S. Cicero St., Chicago, Ill. Edward Marks, 3900 Emerson St., Evanston, Ill., archt. Awarded Feb. 10.

Fleetwood Homes, 900 E. Northwest Hy., Mt. Prospect, Ill. Own Forces $390,000, 20 HOMES, DES PLAINES, ILL.

Erie Constr. Co., 6283 Archer Ave., Chicago, Ill., Own Forces, $850,000, 70 HOMES, LANSING, ILL. John Bartolomeo, 10836 S. Western St., Chicago, Ill., archt.

Fleetwood Homes, 900 E. Northwest Hy., Mt. Prospect, Ill. Own Forces, $390,000. 20 HOMES, PARK RIDGE, ILL.

Vollmar Bros. Constr. Co., foot of Victor St., St. Louis 18, Mo., CA, $500,000. 1 story and 2 story west part 37x131 ft. and 40x80 ft., east part 39x84 ft, and northwest part 29x51 ft., brick, cast stone, steel Wood River REFINERY addns., alterations, ROXANNA, ILL. Shell Oil Co., Wood River, Ill. Jamieson, Spearl, Hammond & Grolock, 1696 Arcade Bldg., 812 Olive St., St. Louis 1, Mo., archts. Bids Jan. 11. CD 1/16/51.

Abell-Howe Co., 53 W. Jackson Blvd., Chicago 4, Ill., CA, $175,000. 24,000 sq. ft. FACTORY, 60 St. and 73 Ave., SUMMIT, ILL. Elkay Mfg. Co., 1874 S. 54 Ave., Cicero, Ill. Awarded Feb. 16.

Floyd F. McCaugherty, 816 S. Spring St., La Grange, Ill. Own Forces, $600,000, 30 HOMES, WESTERN SPRINGS, ILL.

R. Stewart Co., Inc., 8916 Greenfield St., Detroit, Mich. CA $357,900. general contract Birmingham High SCHOOL, BIRMINGHAM, MICH. City, Bd. Educ., Mr. Amos F. Gregory, secy., Martin St., Birmingham, Mich. Bids Feb. 1, awarded Feb. 21. CD 1/14.

▲ **Bay Harbor Corp.,** Book Bldg., Detroit, Mich. Owner Builds. $3,000,000. Huron Beach subdivision 300 single masonry HOMES, CHEBOYGAN, MICH.

▲ **Samuel Seyburn,** 15624 Fenkell St., Detroit, Mich. CA Est. $50,000,000-$65,000,000. redevelop 1,650 acre project, about 5,000 HOMES, WILLOW RUN, MICH. Willow Development Co., Sidney C. Barnes, (atty), 2946 Penobscot Bldg., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Tex., El Paso**—BA About 3/18—U. S. Eng., P.O. Box 1538, Albuquerque, N. M., drilling, testing, developing Water Well No. 13, incl. installation casing, well screens and well head, well to be approx. 800 ft. deep, Fort Bliss, ENG-29-005-55-85. CD 2/16, under LB.

† **Kan., Salina** — STORAGE FACILITIES — BA On Or About 3/23—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., storage facilities for ordnance storage area, Smoky Hill Air Force Base, ENG-23-028-55-60. CD 5/19/52.

† **N. M., Albuquerque**—MOBILE CAMP SITE—BA About 3/24—U. S. Eng., P.O. Box 1538, Mobile Camp Site, M-94, West Mesa, incl. erectnig 14 prefabricated bldgs. of which 9 are Govt.-Furnished, furnish, install misc. facilities, approx. 26,000 sq. yd. road work, sewer, water and electrical, ENG-29-005-55-84.

† **Mo., Sedalia**—STORAGE FACILITIES—BA On Or About 3/25—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., storage facilities, for ordnance storage area, Sedalia Air Force Base, Knob Noster, ENG-23-028-55-61. CD 1/6/54.

† **Colorado**—SWITCHES—BA 3/29—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Sch. 1, Item 1, disconnecting switch; Sch. 2, Item 2, disconnecting switch, Sch. 3, Item 3, disconnecting fuses, for Fort Mogan Sub-station, Colorado-Big Thompson Proj., Spec. DS 4356. L. N. McClellan, asst. comr. and ch. engr.

BIDS ASKED—BUILDINGS

▲ **Minn., Aurora**—SCHOOL—BA 3/15—Bd. Educ., M. Rosandich, clk., 1 story grade school at Hoyt Lakes. $1,000,000. Plans deposit $25. Jyring & Assoc., Hibbing, archts. CD 2/15.

▲ **Tex., Point Comfort**—PLANT—Bids Asked—Aluminum Co. of America, 1200 Aloca Bldg., Pittsburgh 19, Pa., smelting potline for existing aluminum smelting plant. $11,000,000. CD 2/24.

▲ **Tex., Rockdale**—PLANT—Bids Asked—Aluminum Co. of America, 1200 Alcoa Bldg., Pittsburg 19, Pa., two smelting potlines for existing aluminum smelting plant. $24,000,000. CD 2/24.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,
rejected bids Feb. 18, Bridge No. 6866 over outlet of Little Cutfoot Sioux Lake 18.4 mi. northwest of Deer River, Itasca Co. LB $111,099. CD 2/24, under LB.

H. J. Happel Co., 5501 E. Admiral St., Tulsa, Okla. CA $329,000, est. $533,000. sewage treatment plant, GREAT BEND, KAN. City, K. W. Hoar, city clk., Great Bend, Kan. Bids Feb. 17. CD 1/12.

P & L Equipment Co., Box 13007, Houston, Tex., CA $961,461, Elevated Roadway No. 2 on Crawford-Elysian St. connection, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids Feb. 9. CD 2/23, under LB.

▲† **H. B. Zachry Co., Constr. Div.,** Box 2570, San Antonio, Tex., CA $4,584,260. concrete paved runway, ENG-41-243-55-33, KELLY AIR FORCE BASE, TEX. U. S. Eng., P. O. Box 1229, Galveston, Tex. Bids Feb. 9. CD 2/15, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **W. Baumeister Constr. Co.,** Hamm Bldg., St. Paul, Minn. and **G. Hamm Constr. Co.,** 1708 University Ave., St. Paul, Minn. CA Est. $2,000,000. SHOPPING CENTER, Snelling and University Aves., incl. 200,000 sq. ft. department store, 30,000-40,000 sq. ft. store, 30 or 40 smaller stores, ST. PAUL, MINN. Midway Center, Inc., 1708 University Ave., St. Paul, Minn. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, Minn., engrs.-archts.

▲ **Meadow Lane Development Co.,** 1119 Sharp Blvd., Lincoln, Neb. Owner Builds. $6,000,000. 600 DWELLINGS, vicinity 76 and Vine Sts., LINCOLN, NEB.

Board for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., Austin, Tex., rejected bids Feb. 3, RECEIVING, TREATMENT BLDG. for Austin State School, AUSTIN, TEX. LB $550,000. CD 2/11, under LB.

B. F. Williams Lumber Co., 3407 Rice St., Houston, Tex. Own Forces. $358,118, 32 DWELLINGS; $367,775, 36 DWELLINGS, BELLAIRE, TEX. CD 1/26.

Cadenhead & Rosser, 4776 Trail Lake Dr., Fort Worth, Tex., LB $540,000. STORE, MARKET, FORT WORTH, TEX. Safeway Stores, Inc., Electric Bldg., Fort Worth, Tex. and Bramwell Constr. Co., (Div. of Safeway Stores), 318 Cadiz St., Dallas, Tex. Bids Jan. 25. CD 2/9, under LB.

Wedgewood Development Co., P.O. Box 11131, Fort Worth, Tex. Owner Builds. $750,000. 48 one story brick RESIDENCES, First Sect., FORT WORTH, TEX. Horton & Wright, P.O. Box 11131, Fort Worth, Tex., archts.

▲ **Fisher Constr. Co.,** Box 6325, Houston, Tex., CA $2,775,000. Phase 2 of SHOPPING CENTER, incl. 7 separate masonry type bldgs. on 26-acre tract, HOUSTON, TEX. Palms Center Corp., Oscar Holcombe and Sterling Hogan, Sr., 1st Natl. Bank Bldg., Houston, Tex. Irving R. Klein & Assocs., 1317 Austin St., Houston, Tex., archts. Dale S. Cooper & Assocs., 420 Sul Ross St., and Walter P. Moore, 2 Pinedale St., Houston, Tex., engrs. CD 11/17, under LB.

Metropolitan Lumber & Supply Co., R. W. Clemens, 401 Winkler St., Houston, Tex. CA $110,500. WAREHOUSING CENTER, HOUSTON, TEX. Automatic Enterprises of Texas, 401 Winkler Dr., Houston, Tex. CD 2/11.

Rockett Builders, Inc., Irving, Tex. Owner Builds. $350,000. 15 DWELLINGS, IRVING, TEX. CD 2/3.

Robert Ross, Builder, 1360 W. Poplar St., San Antonio, Tex. CA $539,100, 124 DWELLINGS, SAN ANTONIO, TEX. Robert Ross, 1360 W. Poplar St., San Antonio, Tex. CD 9/23.

▲ **Peterson & Lacy,** P.O. Box 474, Dallas, Tex., CA $1,250,000. PLANT constr. to mfr. prefabricated dwellings; CA $250,000. WAREHOUSING or STORAGE, TYLER, TEX. National Homes Corp., James R. Price, pres., By Pass, Lafayette, Ind. CD 2/11.

Weaver Constr. Co., 5555 E. Evans St., Denver, Colo., CA, $669,700, general contract 4 story, 65x200 ft. Emily Griffith Opportunity SCHOOL addn., DENVER, COLO. School Dist. No. 1, 414 14 St., Denver, Colo. Bids Feb. 16, awarded Feb. 23. CD 10/10/52.

Standard Oil Co. of Texas, City Hall, Natl. Bank Bldg., Houston, Tex. Own Forces. $225,000. WAREHOUSING for products storage, ALBUQUERQUE, N. M. CD 9/29.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Nev., Tonopah**—COMMUNICATION STATION — BA 3/18—U. S. Eng., 180 New Montgomery St., San Francisco, Calif., air force communication station, 15 bldgs., etc., ENG-04-203-55-43.

† **Calif., Castle Air Force Base**—ORDNANCE STORAGE AREA—BA 3/22—U. S. Eng., 180 New Montgomery St., San Francisco, ordnance storage area, shops, etc. Eng-04-203-55-45.

Calif., El Centro—BA 3/29—Imperial Irrigation District, 125 S. 5 St., intake works, powerhouse and substation for Pilot Knob hydro-electric generating plant. CD 11/5/53.

BIDS ASKED—BUILDINGS

Calif., Visalia—COURT HOUSE, etc.—BA 4/12—Tulare Co., Court House, court house and county office bldg. Plans deposit $50. CD 11/25/33.

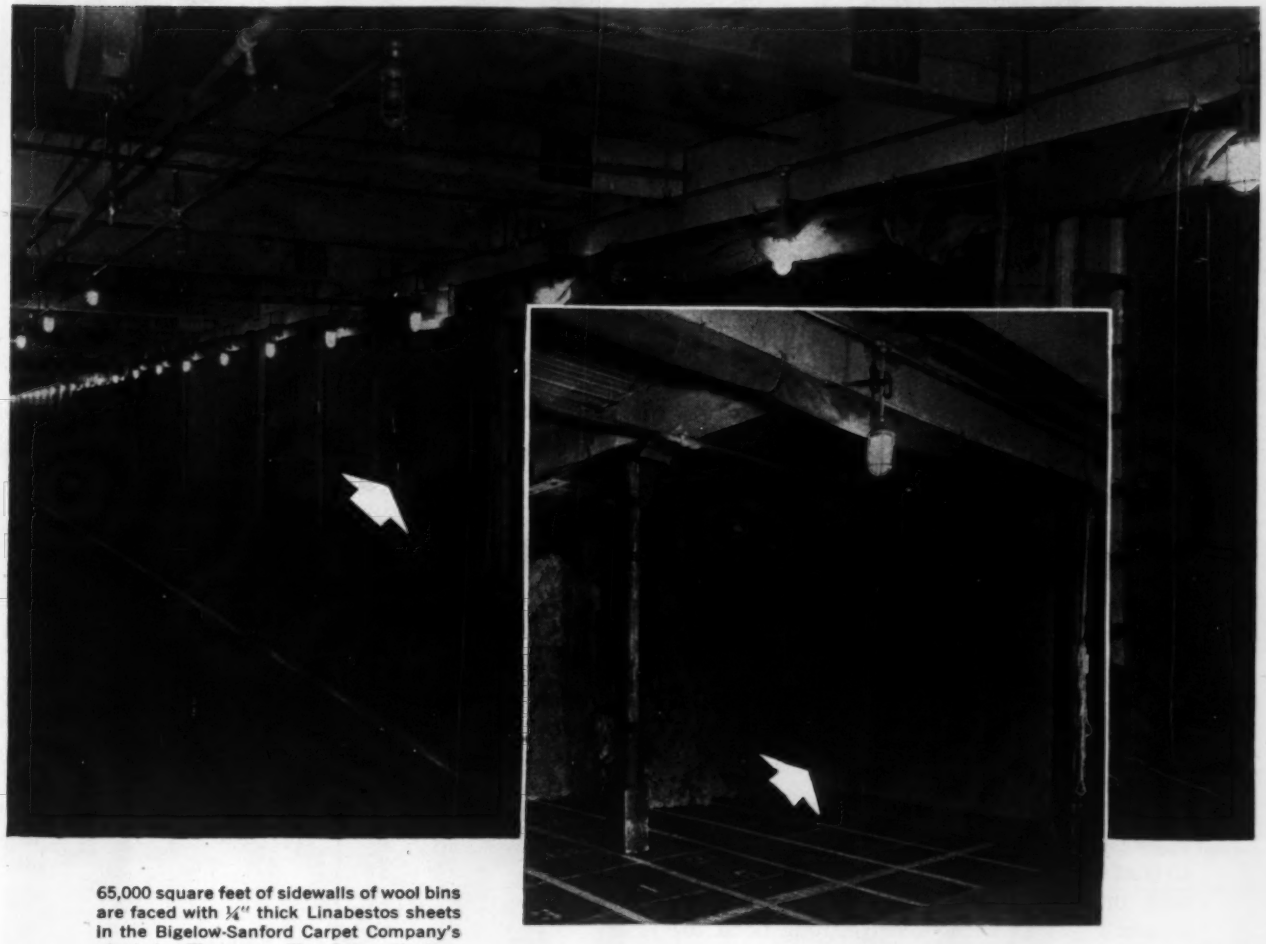
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Paris Brothers, 2752 Park Blvd., Oakland, Calif., LB, $100,900, sanitary and storm sewers to connect Alameda Sewerage sys. to E.B.M.U.D. interceptor, Unit 5, Proj. PW-12-54-23, ALAMEDA, CALIF. City, City Hall, Alameda, Calif. Bids Feb. 15.

† **N. L. Basich,** 1148 N. San Gabriel Blvd., Garey, Calif., LB, $242,616, base road system exten., Eng-04-353

(Continued on page 119)



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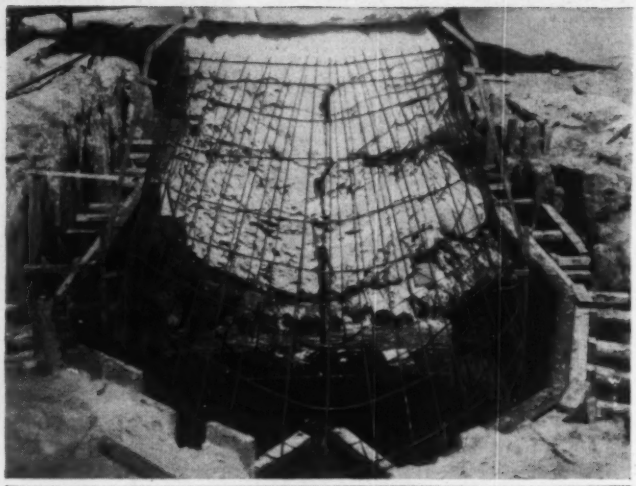

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(Continued from page 116)

55-86, Edwards Air Force Base, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb 11. CD 1/28.

† **Mr. Fred A. Arnold,** 3105 Hollycrest Dr., Los Angeles, 28, Calif., CA, $82,799, security fence, Edwards Air Force Base, ENG 04-353-55-85, MUROC, CALIF. U.S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 11.

Stolte, Inc., 8451 San Leandro St., Oakland, Calif., LB, $155,378, rein.-con. and c.i. sewers in portions 41 Grove and 45 Sts. etc., OAKLAND, CALIF. City, City Hall, Oakland, Calif. Bids Feb. 10. CD 1/31.

Gallagher & Burk, Inc., 344 High St., Oakland, Calif., LB, $102,257, reconstr. Lincoln Ave. between Alida St. and Maiden Lane, OAKLAND, CALIF. City, city Hall, Oakland, Calif. Bids Feb. 10. CD 2/1.

Elmer J. Freethy, 1432 Kearney St., El Cerrito, Calif., LB, $71,960, 1 m.g. concrete reservior, Spec. 646, OAKLAND, CALIF. East Bay Municipal Utility Dist., 512 16 St., Oakland, Calif.

McGuire & Hester, 796 66 Ave., Oakland, Calif., LB, $313,310, water supply line in San Andreas Branch, Contract 680, SAN FRANCISCO, CALIF. Public Utilities Comm., City Hall, San Francisco, Calif. Bids Feb. 14. CD 2/2.

Chas. L. Harney, Inc., 575 Berry St., San Francisco, Calif, LB, $126,689, grading, paving, etc. Portola Dr. between Woodside Ave. and Clipper St., SAN FRANCISCO, Calif. Bids Feb. 16.

BUILDINGS

LOW BIDS AND CONTRACTS

B & R Constr. Co., 110 Market St., San Francisco, Calif. LB $418,000. Center St. SCHOOL, CASTRO VALLEY, CALIF. Castro Valley Elementary School, 6600 Christensen Lane, Castro Valley, Calif. Corlett & Spackman, 347 Clay St., San Francisco, archts.

Carl N. Swenson Co., Inc., Box 558, San Jose, Calif., LB, $571,600, 2 story, rein.-con. OFFICE, for Dist. VI, Div. of Hys., FRESNO, CALIF, State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Feb. 15. CD 1/31.

C. T. Brayton & Sons, Box 95, Escalon, Calif., LB $416,242 Manteca High SCHOOL addns., MANTECA, CALIF. Manteca Union High School Dist., Manteca, Calif. Bids Jan. 13. CD 1/7.

▲ **John E. Branagh & Son,** 42 La Salle Ave., Piedmont, Calif., LB, $1,758,421, OUTPATIENT BLDG., Highland Hospital, OAKLAND, CALIF. Alameda Co., Court House, Oakland, Calif. Bids Feb. 15. CD 1/7.

Hilp & Rhodes, 299 Kansas St, San Francisco, Calif., CA $200,000, WAREHOUSE and OFFICE, PALO ALTO, CALIF. Houghton-Mifflin Co., 500 Howard St., San Francisco, Calif. CD 1/19.

▲ **Cahill Constr. Co.,** 350 Sansome St., San Francisco, Calif., CA, $1,387,653, WAREHOUSE and OFFICE, SAN FRANCISCO, CALIF. S & W Fine Foods, Inc., 155 Berry St., San Francisco, Calif. Awarded Feb. 14. CD 1/7.

Elmer J. Freethy, 1432 Kearney St., El Cerrito, Calif., LB, $472,879, CHURCH, SAN LEANDRO, CALIF. Archbishop of San Francisco, 1100 Franklin St., San Francisco, Calif. CD 11/20/53.

Maino Constr. Co., 2238 S. Broad St., San Luis Obispo, Calif. LB $382,000 general contract AGRICULTURE, ENGINEERING and MECHANICS BLDG., California Polytechnic State College, SAN LUIS OBISPO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Feb. 16. CD 2/1.

W. J. Nicholson Co., P.O. Box 390 A, Santa Clara, Calif., CA, $150,000, MFG. PLANT, SANTA CLARA, CALIF. Somers, O'Rear & Stephan, 343 N. Montgomery St. San Jose, Calif. O. B. Christensen, 725 Kifer Rd., Santa Clara, Calif., engr. CD 1/5.

Williams & Burrows, Inc., 500 Harbor Dr., Belmont, Calif., LB, $837,700, STERM HALL addn. (Dormitory) STANFORD, CALIF. Stanford University, Stanford, Calif. Ambrose & Spencer, 251 Kearny St. San Francisco, Calif. archts.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Toronto—BA 3/14—Municipality of Metropolitan Toronto, 67 Adelaide St. E., bridge over Don River at Hogg's Hollow on Yonge St., to replace collapsed bridge. $620,000. Plans deposit $25. M. M. Dillon & Co. Ltd., 974 Eglinton Ave. W., engrs. CD 12/9.

▲ **British Columbia**—RAILWAY—BA 3/17—Dpt. Railways, Victoria, and Pacific Great Eastern Ry. Co., W.A.C. Bennett, pres., 736 Granville St., Vancouver, railway, Prince George North, Mile 20.0 to Mile 38.0. $8,000,000. CD 2/12/54.

Newfoundland, LaScie—HARBOR—BA 3/23—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., harbor development, White Bay District, $770,000. Plans deposit $50. CD 2/17.

BIDS ASKED—BUILDINGS

▲ **Alta., Calgary**—OFFICE—BA 3/31—Hudson's Bay Oil & Gas Co. Ltd., Calgary, 10 story 130x150 ft., steel, stone office, 7 Ave. and 2 St. W. $3,500,000. Extended date. Stevenson & Dewar, 340 7 Ave. West, archts. CD 1/24.

Ont., Chatham—FEDERAL PUBLIC—BA 4/27—Dpt. P. Wks., Hunter Bldg., Ottawa, 33 story 191x199 ft., rein-con. federal public bldg. $800,000. Plans deposit $500. J. W. Storey, 21 7 St., archt. E. A. Gardner, c/o owner, ch. archt. CD 5/28/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Macnaughton Constr. Co. Ltd., 2427 Eglinton Ave. West, Toronto, Ont., CA, $75,000, test flight hangar addn., aircraft plant, TORONTO, ONT. De Havilland Aircraft of Canada Ltd., Powell Ave., Toronto, Ont. Shepherd & Powell, 57 Bloor St. W., Toronto, Ont., engrs. Awarded Feb. 21.

Mix Brothers Constr. Co. Ltd., 12805 Fort Rd., Edmonton, Alta., LB, $189,881, 1,800 ft. extension to runway at airport, SASKATOON, SASK. Dpt. Transport Gunter Bldg., Ottawa, Ont. Bids Feb. 22. CD 2/16.

BUILDINGS

LOW BIDS AND CONTRACTS

MacWilliam Cinstr. Co., Cheadle and 5 St., Swift Current, Sask., LB, $500,000, Gilbert Patterson Junior High SCHOOL, 12 Ave. S and 21 St. S., LETHBRIDGE, ALTA. Lethbridge School Dist. No. 51, Lethbridge Alta. CD 1/12.

R. Frastacky, 338 Cortleigh St., Toronto, Ont., Owner Builds, $700,000. 700-unit HOUSING DEVELOPMENT in Wiloughby and Stamford Twp., CHIPPEWA, ONT. Dr. E. G. Faludi, 614 Church St., Toronto, Ont., archt.

▲ **Robertson-Yates Corp. Ltd.,** Box 301, Hamilton, Ont., CA, $1,285,591, mess bldg., 2 barrack blocks, outside services, Army Station, PETAWAWA, ONT. Defense Constr. Ltd. 56 Lyon St., Ottawa, Ont. Bids Jan. 25. CD 12/28.

Graham & Sibbett Ltd., 388 Yonge St., Toronto, Ont., CA, $130,000, COAL YARD OFFICE, Yonge and Merton Sts., TORONTO, ONT. Milnes Fuels Ltd., Dominion Bank Bldg., 66 Yonge St., Toronto, Ont. Earle L. Sheppard, 25 Adelaide St. W., Toronto, Ont., archt. Awarded Feb. 21.

Purdy & Henderson Co. Ltd., 128 Elmslie Ave., Ville La Salle, Montreal, Que., CA, $220,000. superstructure on FACTORY Addn., DRUMMONDVILLE, QUE. Sylvania Electric (Canada) Ltd., 1 Sylvan Rd., Drummondville, Que. Bids Feb. 14, awarded Feb. 17. CD 2/7.

P. A. Lecuyer Ltd., P. O. Box 374, Val d'Or, Que., LB, $819,000. 24-classroom SCHOOL, GYMNASIUM and RESIDENCE, LA SARRE, QUE. La Municipalite Scolaire du Village de La Sarre, La Sarre, Que. Robitaille & Gerard, 55 Rue Principale, Rouyn, archts. CD 7/20.

John Caron Builder Regd., 48 Ave., Lachine, Que. Owner Builds, $930,000. 70 HOUSES, Acadia Ave., MONTREAL, QUE.

▲ **A. Cohen Constr. Co.,** 20 Springrove Crescent Montreal, Que., Owner Builds. $1,000,000, 120-unit APARTMENT, Northcrest Pl., above Van Horne Ave., MONTREAL, QUE. C. Grenier, 170 Geneva Crescent. Mount Royal, Que., archt. CD 2/3.

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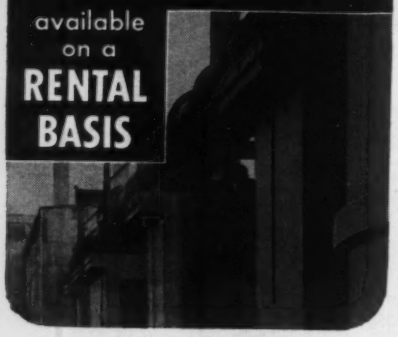

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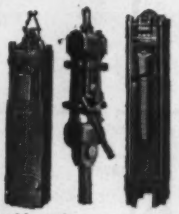

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LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Co., Inc.,** 319 Broadway Ave., Boise, Idaho. U. S. A. CA $24,716,430. constructing San Lorenzo Dam in Quebrada of San Francisco to divert waters of Quiroz River, in Dpt. Piura, PERU. Government of Peru, Lima, Peru. CD 7/2/47.

Proposed Projects

WATER SUPPLY

▲ **Colo., Grand Junction**—City, Court House, expansion water sys. $1,500,000. W. F. Turney & Assocs., 322 Montezuma St., Santa Fe, N. M., consult. engrs.-archts. CD 1/19.

▲ **Mo., St. Louis County**—St. Louis County Water Co., W. Victor Weir, pres., 6600 Delmar Blvd., University City, Zone 5, 15 million gallon per day WW plant incl. pumping equipment, etc. on Meramec River to serve southern part of county, $1,000,000. Site changed. CD 6/11.

Okla., Clinton—City, postponed bond election until April, WW extens. $950,000. V. V. Long & Co., Colcord Bldg., Oklahoma City, consult. engrs. CD 1/31.

▲ **Wash., Bellingham**—City, City Hall, dam on middle fork of Nooksack River with pipe line to Lake Whatcom. $2,413,000. J. W. Cunningham & Assocs., Portland Trust Bldg., Portland, Ore., consult. engrs.

SEWERS, WASTE DISPOSAL

Colo., Boulder—City, City Hall, storm sewerage sys. $632,000. Harold Hoskins & Assocs., 720½ 9 St., Greeley, consult. engrs. CD 9/19/51.

▲ **Conn., Bridgeport**—City, Mayors Office, City Hall, incinerator at Wordin Ave. Dump $1,000,000. CD 9/13/49.

▲ **Mich., Livonia**—City, Elbert M. Harton, mayor. sewers 8.5 mi. square mi. for 3,000 existing homes, and new homes, $5,100,000. Gilbert T. Jerome, 1437 National Bank Bldg., Detroit, consult. engr. CD 9/1/53.

▲ **N. C., Wilson**—City, Wilson, bond election May 12, sewerage sys. imprvs., expansion $1,650,000. CD 9/26/50.

BRIDGES

▲ **KENTUCKY**—State Hy. Dpt., Frankfort,
Kenton Co.—bridge across Ohio River near present C. & O. Bridge, to link with Third St. Distributor and new hy. from Florence through Covington, Covington. $4,500,000.

STREETS AND ROADS

▲ **KENTUCKY**—State Hy. Dpt., Frankfort,
Kenton Co.—hy. from Florence to Ohio River, 52 ft. wide with 12 in. divider, Covington, $8,000,000.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Westwood—hy. Rte. 128, $2,000,000.

▲ **New York**—Bd. Supervs. Nassau Co., Court House, Mineola,

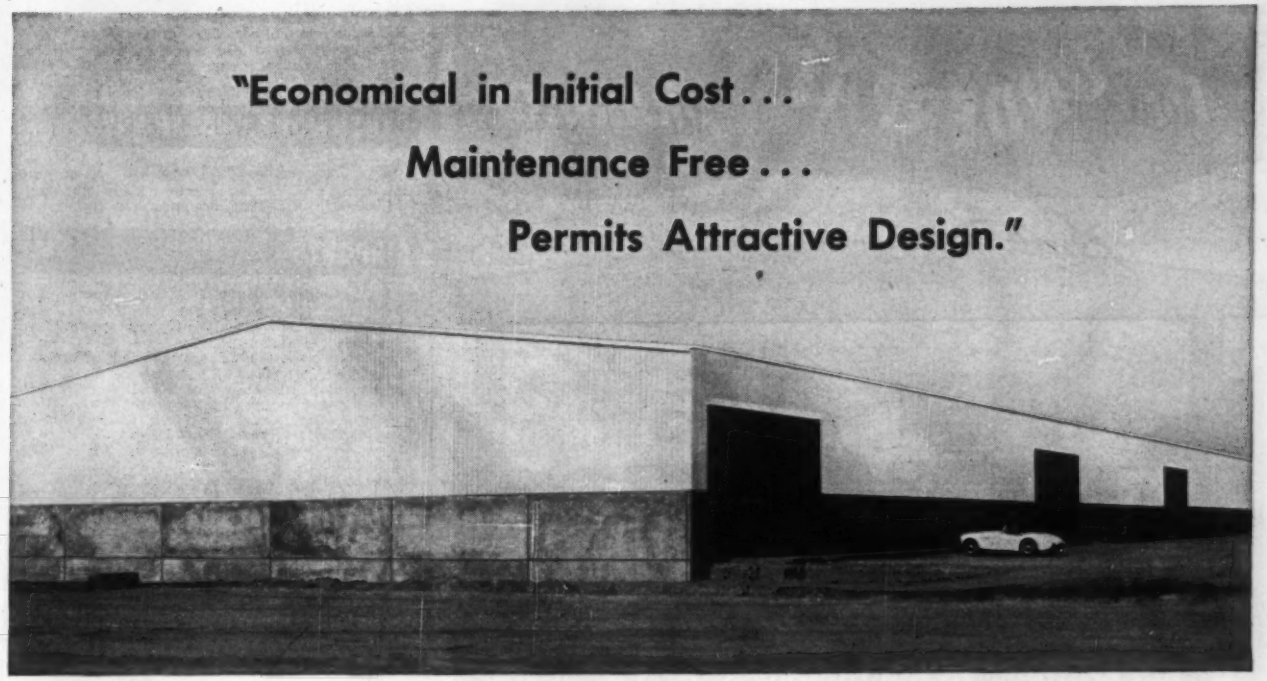
ROAD IMPRVS.

Hicksville-Plainview-Farmingdale Rd. from Oyster Bay Rd. to Massapequa-Woodbury Rd., Plainview, $700,000.
Old Country Rd. from Clinton to Ellison Aves., Carle Place and Westbury, $300,000.
South Oyster Bay Rd. from Old Country Rd. to Keene Gate, Plainview, $750,000.
New Hyde Park Rd. from Jericho Turnpike to Marcus Ave., New Hyde Park and North Hills, $750,000.
Denton Ave. from Jericho Turnpike to Hillside Ave., Garden City Park, $300,000.
Franklin Square Rd. from Southern State Parkway to Hempstead-Farmingdale Turnpike, Franklin Square, $700,000.
Barnum Ave. from Jerusalem Ave. to Hempstead-Farmingdale Turnpike, $900,000.
Merrick Rd. from Long Beach Rd. to Lewis Pl., Rockville Center, $165,000. CD 11/13/44.

▲ **TEXAS**—Texas Turnpike Auth., c/o Clarence B. Kloppe, 6834 Lakeshore St., Dallas,
Dallas and Tarrant Counties—constr. 31 mi. 6 to 8 lane Turnpike Rd. between Dallas and Fort Worth. $58,500,000. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York, N. Y. with Associated Turnpike Engineers (Forrest & Cotton, 803 Praetorian Bldg., Dallas, Tex., Powell & Powell, Thomas Bldg., Dallas, Tex., Freese & Nichols, 407 Danciger Bldg., Fort Worth, Tex. and Joe J. Rady & Co., Insurance Bldg., Fort Worth, Tex.) consult. engrs. CD 11/22/54.

▲ **VIRGINIA**—Old Dominion Turnpike Auth., Richmond, plans 75 mi. toll road in Western Virginia from near Mount Airy, N. C. to tie in with West Virginia Turnpike near Princeton, W. Va. Est. cost $100,000,000. J. E. Greiner Co., 1006 N. Charles St., Baltimore 1, Md., will make surveys, plans and supervise construction. Associated Virginia Engineers (Wiley & Wilson, Lynchburg, Va., Samuel J. Caulfield, Arlington, Va., Hayes, Seay, Mattern & Mattern, 1615 Franklin Rd., S.W., Roanoke, Va., Lublin-McGaughy & Assocs., 220 W. Freemason St., Norfolk,

(Continued on page 122)



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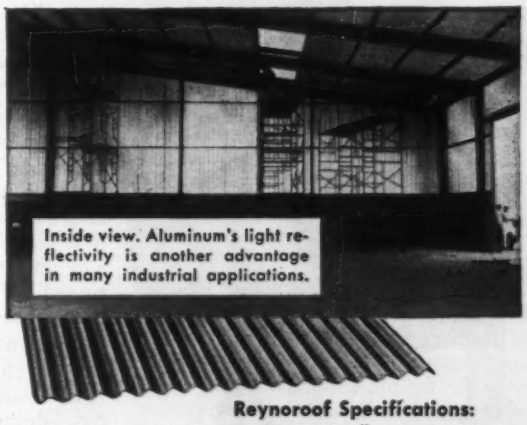

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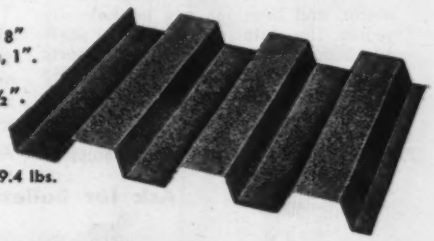

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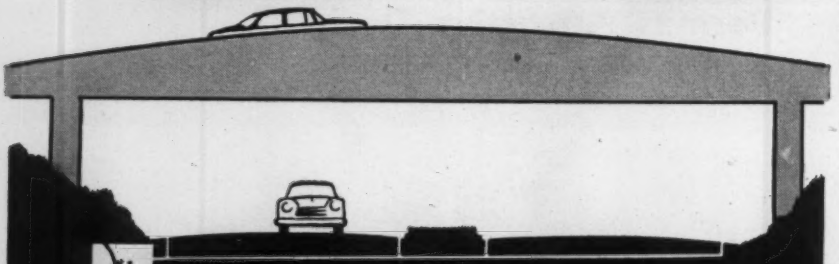

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Can be supplied with control systems having no moving parts in the pits. Multiple installations are furnished with controls to program the operation for load requirements.

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The NON-CLOG Impeller is of manganese bronze; pump shaft stainless steel; permanently sealed ball bearings; volute type casing of nickel iron; motor windings of special design and construction are permanently non-corrosive; motor housing machined and sealed to exclude dirt and water.

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(Continued from page 120)

Va. and Myron Sturgeon, 3420 Atlantic Ave., Virginia Beach, Norfolk, Va.) will design. Coverdale & Colpitts, 120 Wall St., New York, N. Y., will make traffic surveys.

EARTHWORK, WATERWAYS

▲ **Que., Drummondville**—City, City Hall, power plant at Spicer Falls at St. Francois River, near here. $3,000,000. O. Bessette, c/o owner, city engr.

AIRPORTS

▲ **N. Y., Idlewild**—AIRPORT BLDGS.—Port of New York Auth., 111 8th Ave., New York, Zone 11, plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, Zone 22,
international arrivals bldg. and two adjacent airline wing bldgs. $15,000,000.
seven individual airline terminal bldgs., American Airlines, Eastern Airlines, Pan American Airways, Trans World Airlines, United Air Lines, National Airlines and Northwest Airlines, $30,000,000.
roadways. taxiways, aprons, landscaping and utilities, $15,000,000.
Hangar No. 10 for American Airlines, $5,000,000.
Hangar No. 12, for Trans World Airlines, $5,000,000.
Hangar 14, for Pan American World Airways, $5,000,000.
Industrial bldg. for Standard Switchboard Co., $200,000.
General purpose bldg. for S. M. S. Instrument Sales and Service, Inc. $144,000.
two addnl. cargo bldgs. of 60,000 sq. ft. each, $2,597,000.
three taxiways, $1,731,000, at New York International Airport. Wallace K. Harrison, 630 Fifth Ave., New York, Zone 20, design consult. CD 1/18/54.

O., Akron—AIRPORT TERMINAL—Comrs. Stark and Summit Counties, Court House, airport terminal at Akron-Canton Airport, $750,000, Landrum & Brown, 111 E. 4 St., Cincinnati, engrs. for economic study. CD 3/24/52.

▲ **Tex., Austin** — AIRPORT — City, City Hall, Robert Mueller Municipal Airport, $1,500,000; Unit 1, Instrument runway, $700,000. Gill & Willis, 1913 San Jacinto St., Dallas, consult. engrs. CD 10/6.

PUBLIC BUILDINGS

Ala., Huntsville—HOSPITAL—Huntsville Hospital, Huntsville, plans by Van Keuren, Davis & Co., 3004 75th Ave. S., Birmingham, part 2 story, part 3 story 35,000 sq. ft., rein.-con., masonry hospital addn. $500,000. CD 11/24/52.

Calif., Baldwin Park—SCHOOL IMPRVS. — Baldwin Park School Dstrict, Baldwin Park, voted $900,000 bonds schools imprvs.

Calif., Costa Mesa—SCHOOLS—Costa Mesa Elementary School Dist., voted $875,000 bonds, schools. CD. 12/13.

Calif., Downey—SCHOOL—Downey Union High School, Downey, plans by Deuman & McDonald, 5749 S. Wilton Pl., Los Angeles, 50,000 sq. ft. West Junior High School $750,000.

Calif., Lancaster—SCHOOLS—Lancaster School District Lancaster, voted $800,000 bonds, Feb. 8, Monte Vista School addns. and school imprvs. CD 11/18.

▲ **Calif., Palm Springs**—SCHOOLS—Palm Springs Unified School Dist., Palm Springs, voted $2,125,000 bonds, schools.

Colo., Monte Vista—SCHOOL—Consolidated School Dist. No. 8, Rio Grande Co., Monte Vista, defeated bonds Feb. 15, Junior High School $743,000. Wheeler & Lewis, 2215 W. 32 Ave., Denver, consult. engrs. CD 2/2.

▲ **Conn., Hartford**—SCHOOL—City, 550 Main St., plans by Keith Sellers Heine, 71 Oxford St., elementary school, Southwest Section, corner Newington and New Britain Aves. $1,600,000. CD 11/11.

▲ **Conn., Torrington**—SCHOOL—City Bd. Educ., Fiore Petricone, chn., 68 Church St., high school, $3,000,000.

Fla., Miami—POLICE HEADQUARTERS—City, Dinner Key, City Hall Miami, police headquarters bldg., on Miami Country Club site, $600,000. CD 11/30/53.

Fla., Miami—TRADE MART—City, Dinner Key City Hall, Miami, Trade Mart for city on Miami Country Club Site, $750,000.

▲ **Ga., Atlanta**—FARMERS MARKET—Georgia Farmers Market Auth., State Capitol, Atlanta, Atlanta Farmers Market, $4,500,000.

Ind., Shelbyville — SCHOOL — School Bd., plans by McGuire & Shook, Fletcher Trust Bldg. Indianapolis, Junior High School in Laura Morrison Park near southwest side, $500,000.

▲ **Ky., Bowling Green**—BUILDINGS—Western Kentucky State College, Bowling Green, 8 buildings, $5,000,000.

Ky., Louisville—SCHOOL—Jefferson Co., Bd. Educ., 618 W. Jefferson St., plans by Hartstein, Louis & Henry, MacDonald Bldg., 1 story, brick, concrete block Brown's Lane Elementary School, $500,000.

Md., Baltimore—INDUSTRIAL—State, Dpt. P. Wks., 506 Park Ave., Baltimore, industrial bldg. at Maryland Penitentiary, $700,000.

▲ **Md., Towson**—SCHOOL—Baltimore Co. Bd. Educ., Aigburth Rd., plans by Hopkins & Burton, 10 E. Mulberry St., Baltimore, Zone 2, Sudbrook Junior-Senior High School, west of Baltimore, $1,500,000.

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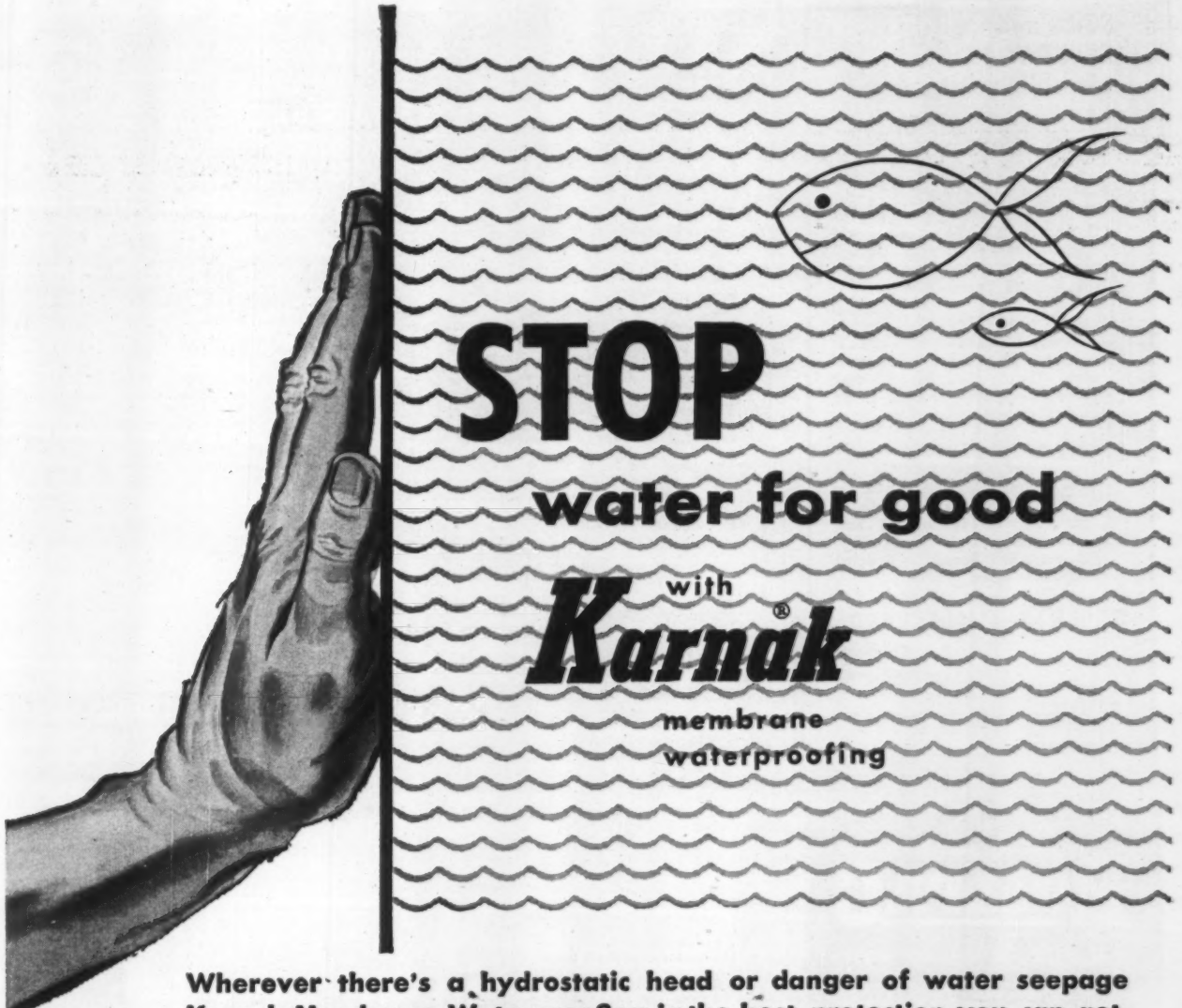

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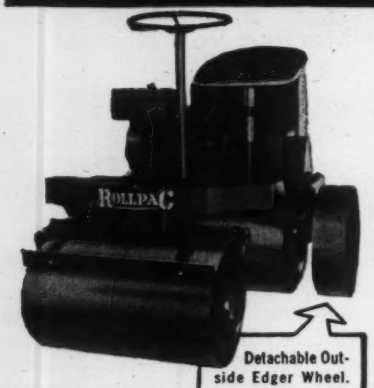

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(Continued from page 122)

Mass., Barnstable—SCHOOL—Town, P. Gordon Nelson, chn. School Comn., plans by Richard Sears Gallagher, Main St., brick, steel, concrete Barnstable and West Barnstable Elementary School, $650,000. CD 10/1.

▲ **Mass., Malden**—CITY HALL—City, city hall, $1,500,000.

Mass., Peabody—SCHOOL—City, 75 Central St., high school addn. $500,000.

▲ **Mass., Quincy**—HOSPITAL—City, City Hall, Quincy City hospital addn. $2,000,000. CD 3/9/53.

▲ **Mich., Ann Arbor**—SOCIAL SCIENCE, etc.—Bd. Regents University of Michigan, W. K. Pierpont, vice pres., Service Bldg., social science bldg., $1,450,000; development of north campus, $300,000; exten. utilities sys. $650,000. University of Michigan.

Minn., Mound—SCHOOL—Bd. Educ., Independent School Dist. No. 85, V. E. Clausen, clk., plans by Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, school, $500,000.

▲ **Minn., West St. Paul**—SCHOOL—Bd. Educ., Independent Consolidated Dist. No. 2, Dr. F. M. Owens, Jr., chn., $1,200,000 bond election Mar. 22, grade school near Lexington Ave. and Belt Line (Ky. 100) $600,000; second grade school near Charlton St. and Wentworth Ave. CD 11/9/53, under Minn., St. Paul.

Mo., Ferguson—SCHOOL—Reorganized School Dist. R-2, Bd. Educ. Virgil C. McCluer supt. Schools, 200 Church St., voted $850,000 bonds, brick, concrete junior High School southside U. S. 66 between Old and New Florissant Rd., $750,000; elementary school, $100,000. Charles W. Lorenz, 700 N. Ballad Rd., Rte. 13, Box 1378, Kirkwood, Zone 22, archt. CD 1/26.

▲ **Mo., Joplin**—SCHOOL—Joplin School Dist. Bd. Educ., Roi S. Wood, supt. Schools, $2,050,000 bond election Apr. 4, Senior High School on 32 acre tract in east central area, Peterson & Scharhag, 1103 E. Armour St., Kansas City, Mo., archts. CD 9/9.

▲ **Mo., St. Louis**—ART MUSEUM—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, imprvs., addns. to City Art Museum in Forest Park, $2,300,000. CD 10/30/51.

▲ **Mo., St. Louis**—OFFICE—City, c/o Frank J. McDevitt, pres. Bd. P. Service, City Hall, 12 and Market Sts., Zone 3, 20 story office with 2 story and 4 story wing, 12 Blvd., Market and 14 Sts. and Clark Ave., incl. underground garage, surface parking, $20,000,000. CD 4/26/43.

▲ **Mo., University City** (St. Louis 5 P.O.)—SCHOOL—School Dist. of University City, Bd. Educ., Dr. Julius E. Warren, supt. Schools, 6701 Delmar Blvd., Zone 5, voted $1,000,000 bonds Feb. 15, remodeling Ward Junior High School, addns. to Brittany, Pershing, Jackson Park and Hawthorne Schools, constr. indoor swimming pool. CD 4/16/53.

N. Y., Dannemora—HOSPITAL, etc.—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, Ward Bldg. No. 40 addn., incl. service connections and imprvs. of grounds, $350,000; Ward Bldgs. Nos. 2, 3 and 4 modernization, $500,000, both at Dannemora State Hospital, for Dpt. Correction.

N. Y., Flushing—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Proj. E-346, P. S. 24 addn., Holly Ave., Robinson and Union Sts. $850,000. CD 10/15/48.

N. Y., Kenmore—OFFICE—Union Free School Dist., 155 Delaware Rd., plans by Fenno-Reynolds-McNeil, engrs.-archts., 2000 Sheridan Dr., Tonawanda, 2 story office for school sys., Colvin Blvd., Tonawanda Twp. $500,000.

N. C., Wilson—COMMUNITY CENTER—City, bond election May 12, community center, $550,000.

▲ **O., Columbus**—SCHOOLS—Bd. Educ., Franklin Local School Dist., V. J. Ullman, supt., Columbus, bond election May 3, grade school, high school at Demorest and Briggs Rds. $1,252,000.

▲ **O., Dayton**—SCHOOLS—Bd. Educ., 232 N. Main St., plans by Yount & Sullivan, Third National Bank, Fairport Grade School addn., $520,000; plans by Rial T. Parrish, Knott Bldg., colored-white high school, $450,000; plans by Hart, Igleburger & Assoc., Hulman Bldg., school and Meadowdale School addn., $748,000. CD 1/11.

Ore., St. Helens—HIGH SCHOOL—St. Helens School Dist., St. Helens, defeated bonds Feb. 8, high school. $900,000. Annand, Boone & Lei, 1530 S. W. Taylor St., Portland, archts.

▲ **Pa., Jeannette** — HIGH SCHOOL — School Dist. of Jeannette, Jeannette, plans by Sorber & Hoone, 711 1st Natl. Bank, Greensburg, 2 story bsmnt., brick, tile Senior High School. $1,885,000. CD 3/25.

Pa., Sharon—CITY HALL—City, Mayor Myron W. Jones, city hall, $750,000.

▲ **Tex., Austin**—SCHOOL BLDGS.—State Bd. Control, Capitol Station, plans by Fehr & Granger, 502 E. 5 St. and Niggli & Gustafson, 1313-A S. Congress Ave., primary masonry classroom bldg., $375,000; masonry secondary classrooms bldg., $370,000; cottages, $500,000; auditorium, $350,000; informatory, library and administrative (as group) $365,000; vocational, $350,000; laundry plant, $90,000. Walter Moore, 2 Pinedale St. and Blum & Guerrero, 1700 Guadalupe St., consult. engrs. CD 10/5.

▲ **Tex., Beaumont**—SCHOOLS—South Park Independent School Dist., 1025 Woodrow St., voted bonds Feb. 12, (Negro) Elementary School No. 1, $390,000; (Negro) Elementary School No. 2, $485,000; (White) Elementary School No. 1, $425,000; (White) Elementary School No. 2, $550,000. CD 2/4.

Tex., Gatesville—SCHOOL—Gatesville Ind. School Dist., Gatesville, plans by Wilson, Patterson & Assocs. Box 9035, Fort Worth, high school, $500,000. CD 10/29/52.

Utah, Roy—HIGH SCHOOL—Weber Co. Bd. Educ., 2324 Adams Ave., Ogden, plans by Paul S. Hodgson, 427 Kiesel Bldg., Ogden, Junior High School. $650,000.

▲ **Vt., Windsor** — BUILDINGS, etc. — State, Vermont Prison Investigating Comm., State House, Montpelier, 10 new bldgs., incl. admin. bldg., dormitory, etc. $2,300,000

Va., Roanoke—SCHOOL—Roanoke County School Bd., R. D. Nininger, supt., Court House, Salem, plans by Frantz & Addkinson, 501 City & State Bldg., Cave Spring District Elementary School, near here. $800,000.

▲ **Wis., Madison**—DORMITORY—University of Wisconsin, Madison, raze Chadburn Hall and replacing with dormitory for girls, $2,500,000.

Wis., Manitowoc—COURT HOUSE ANNEX—Manitowoc Co. Court House, plans by F. W. Raeuber & Assocs., 1024 S. 9 St., 5 story, 50x140 ft., court house annex, $750,000.

Wis., Monroe—SCHOOL—Bd. Educ., Monroe., plans by Weiler & Strang, 114 N. Carroll St., Madison, Senior High School addn. $518,000-$948,000. CD 6/3.

▲ **B. C., Vancouver**—CONCERT HALL, etc.—City, City Hall, plans by Ray Affleck & Guy DesBarats, Jean Michaud, Hazen Sise & Fred Lebensold, 4350 Sherbrooke St. W., Montreal, Que., 189x350 ft. concert hall, auditorium, parking garage plaza, 3 story administration portion, $3,000,000.

Ont., Fort William—HOME FOR AGED—Fort William & District Joint Home for the Aged, J. Spooner, chn., Fort William, plans by L. Y. McIntosh & Assocs., 414 Victoria Ave., 150-bed home for aged, Lillie St. $750,000. CD 12/14/53.

▲ **Ont., London**—SCHOOL—East Middlesex High School Bd., Ernest Caverhill, R.R. 1, Ilderton, plans by Riddell & Connor, 424 Wellington St., brick, steel high school, Clarke's Side road just east of here, $1,000,000. CD 10/11.

Ont., Peterborough — COMMUNITY CENTER, etc. — Peterborough Memorial Community Centre Bldg. Comm., c/o Blackwell, Craig & Zeidler, archts., 147 Hunter St. W., community center, auditorium, club rooms, $800,000. CD 7/19/44.

COMMERCIAL BUILDINGS

Ala., Florence—SHOPPING CENTER—George McBurney & M. King, Bliss Bldg., plans by Turner & Northington, Medical Arts Bldg., 1 story, 60,000 sq. ft. shopping center. $500,000.

▲ **Calif., Palos Verdes**—DWELLINGS—McCarthy Co., 1802 W. 9 St., San Pedro, 400 frame, stucco dwellings in Palos Verdes Area, $4,000,000.

▲ **Conn., Glastonbury**—RESIDENTIAL DEVELOPMENT—Allied Constr. & Eng. Co. of Florida, Kenneth C. Gatcheller, pres., c/o Norris F. Prentice, archt., 343 New London Turnpike, 130 home residential development. $3,000,000. John J. Mozzochi, 343 New London Turnpike consult. engr.

Conn., Manchester — RESIDENTIAL DEVELOPMENT — Frank Wood, 150 Lakewood Circle, residential development, Darling Farm, $500,000.

▲ **Conn., New Haven**—SHOPPING CENTER—Joseph Mariani, 222 Forbes Ave., plans by Leo F. Caproni, 1221 Chapel St., shopping center, Brookside Sect. $1,000,000.

Conn., New London—SHOPPING CENTER—New London Plaza, c/o Lazarus Heyman, West St., Danbury, plans by Charles H. Abramowitz, 52 Joffe Terrace, New Haven shopping center, Broad, Mercer, Williams and Brainard Sts. $500,000.

▲ **Conn., West Hartford**—RESIDENCES—Robert H. Garland, 51 Briarwood Rd., 165 residences, Bloomfield Ave. $2,500,000.

▲ **D. C., Wash.**—OFFICE. National Rifle Assn. of America 1601 Rhode Island Ave. N. W., office addn. $1,500,000.

▲ **Fla., Miami**—HOMES—Gerald E. Hall, c/o Harry E. Penney, archt., 7251 Red Road, 20 homes in south Miami. $500,000.

▲ **Fla., St. Petersburg**—MOTEL—Doctor's Motels, Inc., Joe M. Offill, pres., c/o Kivett & Myers, archts., 1016 Baltimore St., Kansas City, Kan., 100-unit motel, 2 restaurants, swimming pool, boat docks on Tampa Bay at Sunshine Skyway, $1,000,000. C. Dale Dykema, Redington Beach, archt.

▲ **Ga., Atlanta**—OFFICE—Ben Massell, 40 Pryor St. S.W., 12 story 250,000 sq. ft. downtown office, Peachtree and Baker Sts., $2,500,000.

Ill., Melrose Park—CHURCH—St. Paul's Lutheran Church, 9 and Alko Sts., plans by Hensen & Halstead, 228 N. La Salle St., Chicago, Zone 1, church. $500,000.

▲ **Kan., Wichita**—Y.M.C.A BLDG.—Young Men's Christian Assoc., 424 E. First St., plans by Forsblom & Parks, Beacon Bldg., and Y.M.C.A. Building Service, 19 S. LaSalle St., Chicago, Ill., Y.M.C.A bldg. $1,500,000. CD 10/22/47.

▲ **Mass., Braintree**—SHOPPING CENTER—William Filene's Sons Co., Washington and Summer Sts., Boston, South Shore Shopping Center, 100 acres Rte. 37 near Quincy Line, $5,000,000.

▲ **Mass., Brockton**—RESIDENTIAL DEVELOPMENT—Martin Cerel, 18 E. Central St., Natick, residential development 224 units opposite municipal Golf course, adjacent to D. W. Field Park, $3,000,000.

Mass., Everett—HOSPITAL—Whidden Memorial Hospital, Dr. C. Barbarisi, bldg. comm., 780 Broadway, hospital wing addn., Garland St. $850,000.

(Continued on page 127)

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FATAL ACCIDENTS

PROPERTY DAMAGE

ACCIDENTS DUE TO SKIDS

ACCIDENTS ON DRY ROADS

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An analysis of official 1953 North Carolina highway accident records shows conclusively that the type of pavement affects accidents. Covering more than two billion miles of travel and 6000 accidents on the state's heavily traveled roads, the study included 433 miles of concrete and 1152 miles of the other most commonly built pavement.

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24% more accidents
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22% more property damage
67% more accidents due to skidding
18% more accidents on dry roads
46% more accidents on wet roads
23% more daytime accidents
29% more nighttime accidents

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ACCIDENTS ON WET ROADS

DAYTIME ACCIDENTS

NIGHTTIME ACCIDENTS

(Continued from page 124)

▲ **Mass., Framingham**—COMMERCIAL DEVELOPMENT—Martin Cerel, 18 E. Central St., Natick, 3,000,000 sq. ft. commercial development across from "Shoppers World" on Rte. 9, $6,000,000.

▲ **Mass., Wellesley**—LIBRARY—Wellesley College, Margaret Clapp, Pres., Wellesley, plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, library (new or addn.). $1,500,000.

▲ **Mass., West Peabody**—RESIDENTIAL DEVELOPMENT—Martin Cerel, 18 E. Central St., Natick, residential development 400 units Rte. 128 near New Jordan-Marsh Store, $5,000,000.

▲ **Minn., Lexington (St. Paul P.O.)**—SHOPPING CENTER—H. Shanedling Sons Corp., D. S. Shanedling, 2025 Nicollet Ave., Minneapolis, Lexington Pine Shopping Center, 28 units, 200,000 sq. ft. shopping area, Village of Lexington, Anoka Co., on tract at Hy. 8 and Woodland Rd. $2,000,000.

Minn., Minneapolis—HOTEL—Hotel Nicollet, N. R. Messick, genl. mgr., 40 Nicollet Ave., plans by Thorshov & Cerny, 400 Metropolitan Bldg., hotel addn., bsmnt., ground floor for parking ramp, $500,000.

▲ **Mo., St. Louis**—SCHOOL, etc.—Catholic Preparatory School for Boys, Inc., Fred M. Switzer, pres., 220 N. Fourth St., St. Louis, Zone 2, and English Benedictine Congregation, Ampleforth, York, England, (will operate),, constr. various bldgs. for school, housing of teachers, power plant, etc. on 52 acre site south side of Conway Rd. east of Mason Rd. and north of Daniel Boone Parkway, $1,000,000-$1,500,000. CD 8/12/54, under Mo., St. Louis County.

▲ **N. Y., Armonk**—SHOPPING and OFFICE CENTER—Edward A. Lashins, 1 East Post Rd., White Plains, shopping and office center, 63-acre site, Old Westchester Airport facing Rte. 22. $12,000,000.

N. Y., Brooklyn—APARTMENT—Lang Development Corp., 350 Lefferts Ave., Zone 25, plans by Oscar I. Silverstone, 666 Fifth Ave., New York, Zone 19, 6 story apartment, 515 Ovington Ave. $600,000.

N. Y., Buffalo—SCIENCE—University of Buffalo, 3435 Main St., plans by James, Meadows & Howard, archts.-engrs., 250 Delaware Ave., 3 story science bldg. addn. $625,400.

N. Y., Flushing—APARTMENT—Beech & Bowne Building Corp., 26 Court St., Brooklyn, Zone 2, plans by Schulman & Soloway, 100-15 Queens Blvd., Forest Hills, 6 story apartment, Beech Ave., west of Bowne St. $650,000.

▲ **N. Y., Flushing**—CHURCH—St. Kevin's Parish, 45-30 195 St., plans by William J. Boegel, 12 E. 48 St., New York, Zone 17, church, 195 St. $1,200,000.

▲ **N. Y., Flushing**—APARTMENT—Max Steinberg, 260 E. 161 St., New York, Zone 51, plans by Morris Rothstein & Son, 186 Joralemon St., Brooklyn, Zone 2, 6 story apartment, 34 Ave., east of Union St. $1,000,000.

▲ **N. Y., New York**—APARTMENT—Urban Housing Assocs., Joel W. Schencker, pres., 16 W. 46 St., Zone 19, 20 story apartment for 200-families, Sutton Pl., Riverview Terrace and E. 59 St., $1,600,000.

▲ **N. Y., Tonawanda**—STORE—Guelich & Boebel, Inc., 47 University Plaza, Buffalo, plans by G. Morton Wolfe, engr. and archt., 1377 Main St., Buffalo, 54,000 sq. ft. store for J. C. Penney Co.; 37,500 ft. department store addn., 4 smaller stores, concrete block and steel constr. $1,500,000-$1,750,000.

▲ **O., Berea**—HOMES—Bruscino Constr. Co., 17309 Madison Ave., Cleveland, approx. 400 ranch type homes, on 100-acre tract between Barrett Rd. and Center St. and intersected by Nobottom Rd. $6,400,000.

Pa., Monroeville—SHOPPING CENTER—Pittsburgh Miracle Mile Town & County Center, Inc., 393 S. 3rd St., Columbus, O., plans by C. Melvin Frank, 185 E. State St., Columbus, O., 1 story, approx. 75,000 sq. ft. brick, block, tile, steel frame shopping center addn. $800,000.

▲ **Pa., Pittsburgh**—APARTMENT—401 Shady Ave. Corp., Investment Bldg., Pittsburgh, plans by Shear, Spagnuolo & Taylor, 4916 Forbes St., 234-suite 8 story, bsmnt., 4 wings, steel frame apartment. $3,500,000. CD 12/3.

▲ **Tex., Dallas**—APARTMENT UNITS—Louis Hexter, c/o Hexter Title & Abstract Co. and Gernell, Inc., 5816 Lovers Lane, apartment units. No. 1, $1,500,000; No. 2, $1,500,000; No. 3, $1,500,000; No. 4, $1,000,000; No. 5, $1,000,000; No. 6, $1,000,000; No. 7, $1,000,000, foregoing at northeast corner Preston Rd. and NW Hy.

Tex., Fort Worth—SHOPPING CENTER—R. E. Cox & Co., W. Berry St., plans by Curtis A. McClure, 2854 W. Berry St., 1 story, 45,884 sq. ft. masonry shopping center, 450-car parking area. $500,000. R. A. Grimmer, W. T. Waggoner Bldg., consult. engr.

▲ **Tex., Houston**—OFFICE—Federal Reserve Bank of Dallas, 400 S. Akard St., Dallas, plans by Phelps & DeWees & Simmons, 342 W. Woodlawn St., San Antonio, and Golemon & Rolfe, 5100 Travis St., 5-level office for Houston Branch, Jefferson Pease, San Jacinto and Carolina Sts. $2,300,000.

▲ **Tex., Houston**—CLUB BLDG., etc.—Houston Country Club, 7000 Harrisburg Blvd., plans by Wilson, Morris & Crain, 3330 Graustark St., club bldg., swimming pool, terraces, play courts, etc. $1,244,725. Walter P. Moore, 2 Pinedale St., H. E. Bovay, Jr., M. Esperson Bldg., Houston, Tex., and Thomas Church, 402 Jackson St., San Francisco, Calif., consult. engrs. CD 1/13/54, under Unclassified.

Tex., Longview—SCHOOL—First Methodist Church, Longview, plans by Wilson, Morris & Crain, 3330 Graustark St., Houston, Sunday School. $500,000. CD 6/24/53.

▲ **Tex., Victoria**—OFFICE—Victoria Professional Office Bldg., c/o A. B. J. Hammett, Victoria Natl. Bank Bldg., plans by Lockwood & Andrews, archts.-consult.

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			Total	Per Unit	Per Unit Per Year	Original Cost	Original Cost Per Year
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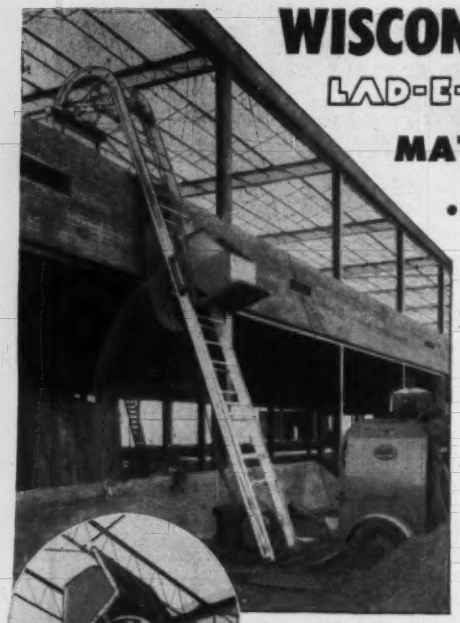

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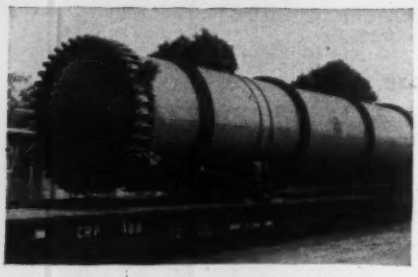

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engrs., 103 N. Liberty St., professional office bldg., 10-acre tract. $1,250,000.

Vt., Burlington—HIGH SCHOOL—R. C. Diocese, Most Rev. Edward F. Ryan, DD Bishop of Burlington, Chancery Office, Burlington, plans by Dirsa & Lampron, 922 Elm St., Manchester, high school. $500,000.

▲ Wis., Milwaukee—MEDICAL HOSPITAL—Marquette University, 615 N. 11 St., teaching and medical hospital, Marquette University Medical School. $3,000,000.

Wis., Milwaukee—HOME—Milwaukee Hospital, 2224 W. Kilbourn Ave., plans by Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., 4 story, bsmnt. Deaconess Home, 5 story hosiptal addn., other imprvs. $600,000.

▲ Ont., Hamilton—DEPARTMENT STORE—T. Eaton Co. Ltd., 190 Yonge St., Toronto, department store on site of present Hamilton City Hall, $1,000,000. CD 7/14/50.

▲ Ont., Toronto—HOUSING—Curran Hall Ltd., 1 Langborn Pl., 900-unit housing in Cedarbrae District of northeastern suburban Toronto near Lawrence Ave. East and Golf Club Rd. $10,000,000.

INDUSTRIAL BUILDINGS

▲ Kan., Topeka—POWER PLANT—Kansas Power & Light Co., 800 Kansas Ave., addnl. of 33 MW unit Tecumseh Station, power plant imprvs. $2,000,000, Bechtel Corp., 3780 Wilshire Blvd., Los Angeles 5, Calif., engrs. CD 1/3/47.

▲ Ky., Louisville—PLANT—General Electric Co., Appliance Park, Louisville, plans by Hartstein, Louis & Henry, MacDowell Bldg., plant, addns. to present facilities, $1,000,000. CD 5/23/51.

Me., Lewiston—FACTORY—Belle Moc, Inc., Oxford St., plans by Stanley S. Merrill, 9 Vine St., Auburn, shoe factory, Goddard Rd. $500,000.

▲ Miss., Corinth—PLANT—Rudolph Wurlitzer Co., 115 S. Wabash St., Chicago, Ill., 100,000 sq. ft. piano mfg. plant, $1,000,000.

▲ N. Y., Buffalo—OPEN HEARTH FURNACES—Colorado Fuel & Iron Corp., Continental Oil Bldg., Denver 2, Colo., remaking and rehabilitation steel mill, incl. enlarging 4 open hearth furnaces from 110 to 170 tons capacity, on company's Wickwire Spencer Steel Div., River Rd., Township of Tonawanda. $7,000,000.

▲ O., Akron—POWER STATION—Ohio Edison Co., 47 N. Main St., power station in Bath Twp. $15,000,000.

▲ O., Cleveland—FACTORY—Sobel Corrugated Container, Inc., 3223 E. 55 St., 1 story, brick 125,000 sq. ft. specialty box items plant, 18600 Miles Ave. in suburban Warrensville Heights, $1,250,000.

O., Xenia—FACTORY—M. F. Moran, pres. Moran Paint Co., 820 Kiser St., Dayton, 50,000 sq. ft. paint factory, on 5 acre tract on Fairground Rd. $500,000.

S. C., Greenville—PLANT—Belrug Mills, Inc., 148 River St., carpet plant addn. $400,000.

▲ Tenn., Chattanooga—KILN—General Portland Cement Co., 111 W. Monroe St., Chicago, Ill., 425 ft. long kiln at plant, $1,000,000. CD 4/18/52.

Tenn., Chattanooga—QUARRY—General Portland Cement Co., 111 W. Monroe St., Chicago, Ill. development quarry in Bennets' Lake area on Tennessee River to supply limestone, incl. new barge-loading facility on river, $500,000.

▲ Tex., San Antonio—GARAGE—Haas & Haynie, 275 Pine St., San Francisco, Calif., 550-car subterranean parking garage, Main Plaza. $1,700,000.

▲ Wash., Anacortes—PULP MILL EXPANSION—Coos Bay Pulp Corp., Anacortes, pulp mill expansion. $1,000,000. Site preparation and pile placement awarded to Croy Piledriving Co., Bellingham, Wash.

▲ Ont., Toronto—WAREHOUSE—Canada Safeway Ltd., 840 Cambie St., Vancouver, B. C., warehouse, 77-acre site on Second Line south of Dundas Hy. $1,000,000.

UNCLASSIFIED

Conn., West Haven—AMUSEMENT PIER—Steeplechase Amusement Pier, Inc., c/o John F. Lynch, engr., 660 Ocean Ave., West Haven, 1,000 ft. steel, timber amusement pier, 170 ft. wide, Savin Rock, 482 Beach St. $500,000.

▲ Ga., Atlanta—ZOO—City, City Parks Dpt., City Hall, zoo, Grant Park, $4,500,000. CD 1/14.

Mich., Marquette — MARQUETTE PALESTRA — City Comn. plans by Harley, Ellington & Day, 153 E. Elizabeth St., Detroit, Marquette Palestra remodeling bldg., enlarging arena to seat 4,500, season community bldg., hockey rink, etc. $940,000.

▲ Minn., Bloomington (P. O. Minneapolis)—STADIUM—Metropolitan Sports Area Comn., G. L. Moore, chn., 7000 Antrim Rd., Minneapolis, plans by Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, baseball stadium, 82 St. south of Hy. No. 100 between Cedar and 24 Aves. $4,000,000.

▲ Texas, New Mexico, Arizona—PRODUCTS PIPE Lines, Inc., (Southern Pacific Ry. Co., parent owners) 913 Franklin St., Houston, 435 mi. products pipe line from El Paso, Tex. through New Mexico to towns of Tucson and Phoenix, Ariz. $17,000,000.

▲ Sask., Regina—EXHIBITION BLDGS.—Regina Agricultural & Industrial Exhibition Assn., Regina, plans by H. K. Black, Black Block, Regina, reconstr. exhibition bldgs., livestock bldg. west south wings of grain bldg. $1,250,000. CD 10/12/50.

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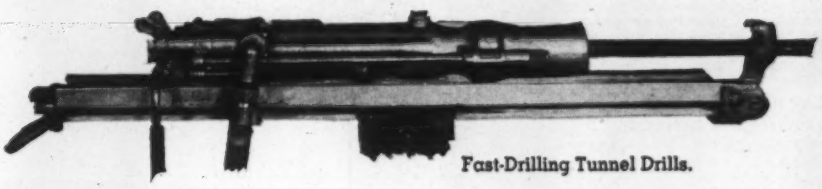

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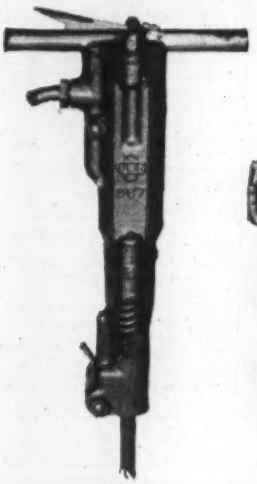

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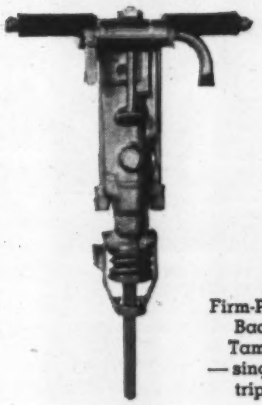

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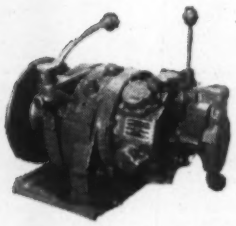

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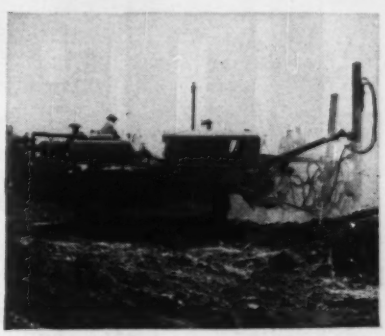

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 16 Maine
STREETS AND ROADS
March 15, 29 Massachusetts

BIDS ASKED—BUILDINGS

▲ **Mass., North Andover**—PLANT—BA 3/22—Western Electric Co., 195 Broadway, New York, N. Y., (selected list bidders), superstructure mfg. plant Merrimac Valley Plant, 1600 Osgood St., Rte. 125. $8,000,000. Extended date. Charles T. Main, Inc., 80 Federal St., Boston, engr. CD 2/8.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
S. J. Groves & Sons, Inc., 19 Rector St., New York, N. Y. LB $4,809,452. Contr. No. 51-030, hy. and bridge, Russell and Blandford. Bids Mar. 1. CD 2/1.

▲ **RHODE ISLAND**—State of R. I. and Providence Plantations, State House, Providence,
M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., CA $2,579,136. c. conc. Interstate Hy. No. 638, R. I. Contr. No. 5-505, FAP FI-01 (6), Richmond and Hopkinton. Bids Feb. 9, awarded Feb. 23. CD 2/15, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John Zandonella**, 70 Chase St., Bridgeport, Conn., LB $2,890,000. Andrew Warde High SCHOOL, FAIRFIELD, CONN. Town, High School Bldg. Comn., Town Hall, Fairfield, Conn. Bids Feb. 28. CD 2/24.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 1 Pennsylvania
STREETS AND ROADS
March 17 New Jersey April 1, 7 Pennsylvania

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Central Pennsylvania Quarry, Stripping & Constr. Co., Box 378, Hazleton, Pa., LB $2,563,168, constr. 2.73 mi. (Sec. 36-E) Northeastern Exten. in Parryville Boro and East Penn and Mahoning Twps., Carbon Co. Bids Mar. 1 CD 2/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Driscoll-Moccia Constr. Co.**, 41 E. 42 St., New York 17, N. Y., LB $13,977,430, general constr.;
Jarcho Bros. Inc., 38-18 33 St., Long Island City, N. Y. LB $1,343,977, heating and ventilating;
Nager Elec. Co. Inc., 426 Broadway, Brooklyn 11, N. Y LB $1,088,000, electrical work;
Far Plumbing Co., 2018 Crotona Parkway, New York 60, N. Y., LB $1,375,000 plumbing for Marlboro HOUSES, Proj. NYS-64-2, in area bounded by W. 11 St., Avenue W, Stillwell Ave., Avenue V, 86 St., W. 8th St., Avenue X, Brooklyn Boro, BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y Bids Mar. 1. CD 2/21.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 15 South Carolina March 16 Virginia
March 23 Louisiana
STREETS AND ROADS
March 15 South Carolina March 16 Virginia
March 23 Louisiana

BIDS ASKED—BUILDINGS

▲ **Miss., Natchez**—PLANT—BA 3/15—Simpson Coal & Chemical Corp., c/o Standard Ore & Alloys Corp., 120 Wall St., New York, N. Y., chemical plant to produce acetylene, anhydrous ammonia and PVC. $20,000,000. (Correction—location). CD 2/18, under Miss., Meridian.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Bero Constr. Co.**, P.O. Box 477, Hampton, Va. CA $2,644,163, est. $2,734,893. Schedule A rigid paving, incl. 411,669 sq. yd. heavy duty strength paving, relocation of road, fence and can Barksdale Air Force Base, ENG-03-050-55-85, SHREVEPORT, LA. U. S. Eng., P.O. Box 67, Little Rock, Ark. Bids Feb. 24. CD 2/2.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 22 Wisconsin March 23 Michigan
STREETS AND ROADS
March 22, 24 Wisconsin March 23 Michigan

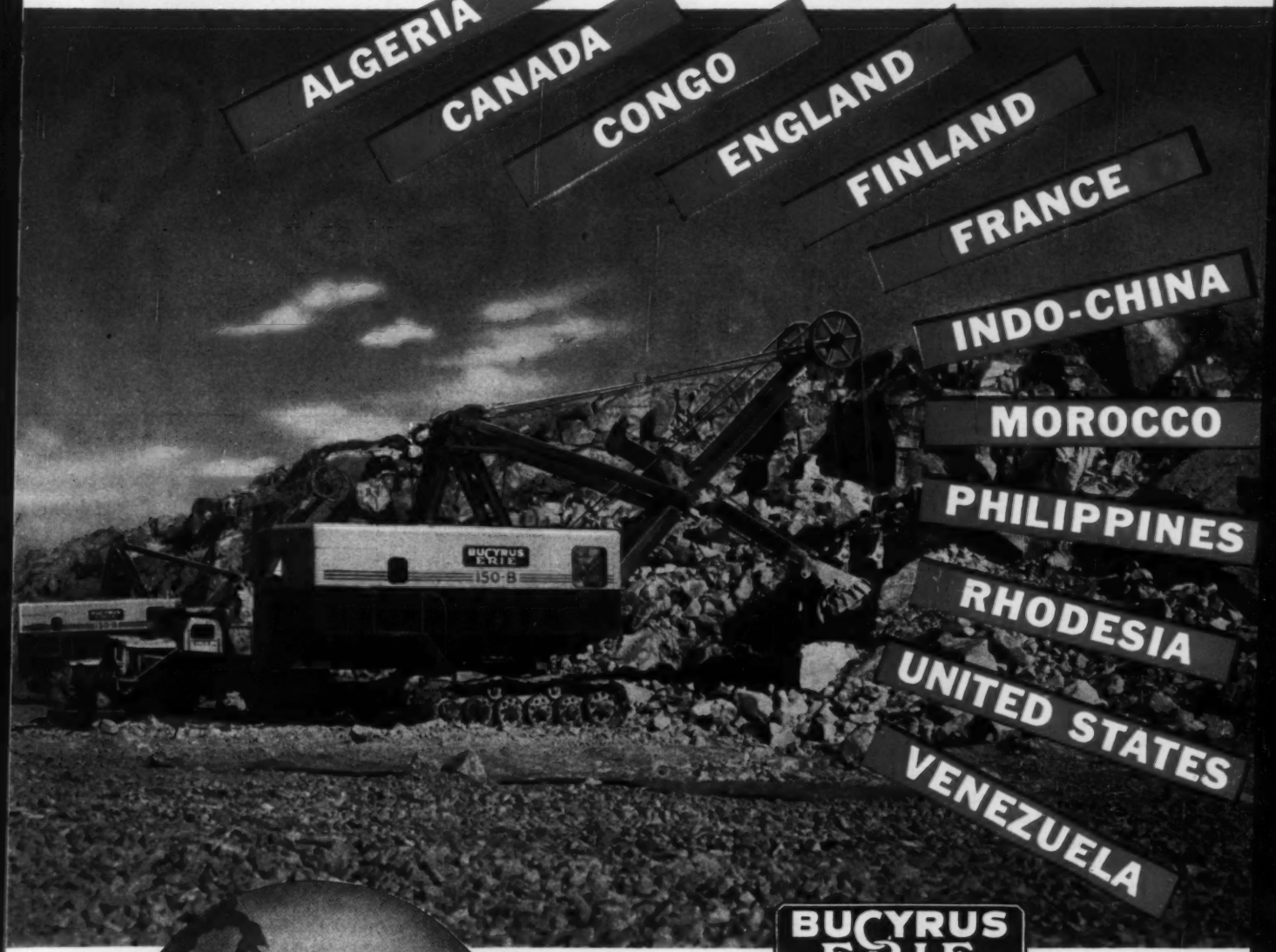
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield,
Sangamo Constr. Co., 700 N. MacArthur Blvd., Springfield, Ill, LB $298,424, c.conc. base course 1.36 mi. conc. base course widn. 301 mi., granular embankment, 1 bridge, and widening 1 bridge 0.22 mi. all on Ill. 4, Sangamon Co.; LB $107,965 bit. resurf. 4.59 mi. Ill. 4 Sangamo Co.; LB $144,566, c. conc. base course 1.27 mi. on FA 4, connecting new Illinois River Bridge at Beardstown with Ill. 100 and 103, Cass and Schuyler Counties;
Peter Baker & Sons Co., 1190 Conway Rd., Lake Forest, Ill., LB, $204,851, intermittent bit. resurf., patching 12.63 mi. Ill. 21 and 83, Lake Co.;
J. D. Barter Constr. Co., 215 S. Jackson St., Harrisburg, Ill., LB, $811,250 c.conc. 2.45 mi. Ill. 13, Gallatin Co.;
Black Top Roads Co., 1929 N. Narragansett St., Chicago 39, Ill., LB, $140,597, bit. resurf. 8.49 mi. Ill. 62, Cook Co.;
Robert A. Black, Inc., 13912 S. Halsted St., Chicago 27, Ill., LB, $481,851, c. conc. base course widn. 13.9 mi. c.conc. base course 2.47 mi. U. S. 51, Lee and La Salle Counties,
Eric Bolander Constr. Co., Winchester Rd., Libertyville, Ill., LB $484,873, c.conc. 4.22 mi. US 66, Grundy and Livingston Counties;
M. J. Boyle & Co., 2480 Elston Ave., Chicago 47, Ill., LB, $558,012, c.conc. 0.28 mi. F.A. 23, Evanston, Cook Co.;
Calhoun County Constr. Corp., Reisch Bldg., Springfield, Ill., LB, $93,476, c. conc. base course widn 6.69 mi. Ill. 107, Pike Co.;
Central Eng. Co., P.O. Box 838, Davenport, Ia., LB, $1,029,301, c.conc. 8.12 mi. FA 7 Whiteside and Lee Counties;
Champaign Asphalt Co., 310 E. Bradley Ave., Champaign, Ill., LB, $131,087, bit. surf. on soil cement base course 3.06 mi. F.A.S. 522 and 663, Douglas Co.;
Crown Rock Asphalt Co., 178 Addison St., Elmhurst, Ill., LB, $102,806, intermittent bit. resurf., patching 6.54 mi. U.S. 45 and 52, Will Co.;
Dale Denny Constr. Co., 507 S. Green St., Anna, Ill., LB, $118,987, bit. on grav. or crushed stone surf. 4.3 mi. F.A.S. 924, Union Co.;
Galvin Constr. Co., 319 W. South St., Plano, Ill., LB $76,679 grav. or crushed stone surf. course 1.41 mi. F.A.S. 276, Kendall Co.;
Chas G. Gilmore Asphalt Products, Inc., Anna, Ill., LB $249,447, bit. resurf. on grav. crushed stone base 9.91 mi. F.A.S. 921 and 922, Jackson Co.;
S. J. Groves & Sons Co., 1104 W. Reynolds St., Springfield, Ill., LB $1,541,773 c. conc. 3.51 mi. U. S. 36, Decatur, Macon Co.;
Gunther Constr. Co., 600 E. Main St., Galesburg, Ill., LB $116,912, c. conc. patching, intermittent bit. resurf. 7.1 mi. Ill. 116, Fulton, Knox and Warren Counties;
J. P. Hollerich Co., P.O. Box 391, La Salle, Ill., LB $163,522, bit. resurf. 7.61 mi. U. S. 51. Lee and La Salle Counties;
J-P Constr. Co., 1750 State St., Chicago Heights, Ill., LB $198,199 c. conc. base course widn. 12.78 mi. c. conc. base course 0.57 mi. Ill. 1.62, Cook Co.;
McCann & Co. Inc., 812 Reisch Bldg., Springfield, Ill., LB $410,311, bit. on grav. or crushed stone surf. 4.84 mi. U. S. 50, Clinton Co.;
Thos. M. Madden Co., 4610 Van Buren St., Chicago 44, Ill., LB $437,093, earth grading 0.43 mi. FA 122 relocated 130 St., Cook Co.;
E. A. Meyer Constr. Co., 1539 Morrow Ave., North Chicago, Ill., LB $597,569, b. conc. 5.24 mi. U. S. 66, Grundy Co.;
Mitchell Constr. Co., 216 E. Madison St., Herrin, Ill., LB $98,393, c. conc. base course and bit. resurf. 0.91 mi. Ill. 148, Franklin Co.;
Moore Bros., Inc., 2000 St. Clair Ave., East St. Louis, Ill., LB $1,332,239. c. conc. 8.24 mi. U. S. 66, Macoupin and Madison Counties;
Regenhardt Constr. Co., Cape Girardeau, Mo., LB $91,311. bit. surf. 3.5 mi. F.A.S. 795, Marion Co.;
Rockford Black Top Constr. Co., 1615 Westchester Dr., Rockford, Ill., LB $187,353, bit. resurf. 9.1 mi. U. S. 51, Lee Co.;
Rock Road Constr. Co., 5915 Rodgers Ave., Chicago 30, Ill., LB $107,523, bit. resurf. 6.21 mi. Ill. 62, Cook Co.;
Ralph Rogers & Co., Inc., P. O. Box 67, Bloomington, Ill., LB $280,561, bit. resurf. 13.66 mi. Ill. 1 and S.B.I. 135, Crawford Co.;
Scheflow & Monahan, 466 Main St., Glen Ellyn, Ill., LB $133,612, grav. or crushed stone base 5.2 mi. F.A.S. 160, Will Co.;
E. T. Simonds. Co., P. O. Box 356, Carbondale Ill., LB $484,222, bit. resurf. 1.74 mi., conc. base course 1.46 mi., c. conc. base course widn. 0.1 mi., 2 bridges, 2 box culverts, Ill. 14 Perry and Franklin Counties;
Thompson Asphalt Co., 6 and McCambridge Sts., Madison, Ill., LB $138,294, bit. resurf. 6.69 mi. Ill. 107 Pike Co.;

(Continued on page 132)

GLOBAL APPROVAL



110-B 4½ cu. yds.
150-B..6-cu. yds.
190-B..8-cu. yds.

Scores of these outstanding excavators have proven their worth in varied quarrying, mining, and heavy-duty construction projects all over the world.

Remember, FOR THAT EXTRA MARGIN — in design, in construction, in all round performance, and, above all, in output — it's BUCYRUS-ERIE Ward Leonard electric excavators. 46155C

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

(Continued from page 130)

Triangle Constr. Co., 480 N. Evergreen Ave., Kankakee, Ill., LB **$307,964,** c. conc. base course wid'n with bit. resurf. 1.82 mi. c. conc. paving 0.25 mi. Ill. 14 and U. S. 51, Perry Co.;

S. S. Viland Constr. Co., 627 E. Jackson St., Morris, Ill., LB **$148,778,** grav. or crushed stone base 5.82 mi. F.A.S. 176, De Kalb Co.;

Zimmerly Constr. Co., Marshall St., Paris, Ill., LB **$613,912,** c. conc. base course 2.09 mi., base course wid'n 9.61 mi. Ill. No. 1, Crawford Co. Bids Feb. 25. CD 2/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Donlaw, Inc.,** 627 Nottingham Rd., Dayton, O. Owner Builds. **$5,000,000.** 235 HOUSES, Liberty Rd., DAYTON, O. CD 2/28.

▲ **Chipley Realty Development Co.,** 2916 Nicholas Rd., Dayton, O. Owner Builds. **$2,300,000.** 220 HOMES, Gettysburg Ave., DAYTON, O. CD 2/28.

▲ **Chipley Realty Development Co.,** 2916 Nicholas Rd., Dayton, O. Owner Builds. **$2,500,000.** 200 HOMES, GROVE CITY, O. CD 2/28.

▲ **Thompson-Brown Co.,** 19426 Grand River, Detroit 23, Mich. Owner Builds. **$3,750,000.** Kendallwood Subdivision, 300 brick HOMES, Twelve Mile and Farmington Rds., FARMINGTON, MICH.

▲ **Stieber Realty Co.,** 4650 Chene St., Detroit, Mich. Owner Builds. **$6,700,000.** 600 brick HOMES, Michigan and Minnesota Section, MARYSVILLE, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

March 18 Kansas — March 22, 23 Texas

STREETS AND ROADS

March 18 Kansas — March 22, 23 Texas

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **Western Contg. Co.,** 400 Benson Blvd., Sioux City, Iowa. CA **$5,098,188,** earthwork, Stage IV, Oahe Reservoir Proj., near Pierre, Inv. 25-066-55-73, SOUTH DAKOTA, U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 8. CD 2/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The H. K. Ferguson Co.,** 1783 E. 11 St., Cleveland, O. CA, Est **$2,000,000,** PLANT addn., DES MOINES, IA. Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O.

▲† **J. D. Hedin Constr. Co.,** 2900 Newton St. N. E., Wash., D. C., LB **$3,928,000.** HOSPITAL, HOUSTON, TEX. Veterans Admin., Munitions Bldg., Wash., D. C. Wyatt C. Hedrick, 5201 Fannin St., Houston, Tex., engr.-archt. Bids Mar. 1. CD 2/2.

FAR WEST

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Witt Constr. Co.,** Box 19, Provo, Utah. CA **$1,648,800,** est. $1,500,000. HIGH SCHOOL, OREM, UTAH. Alpine School Dist., Clarence D. Ashton, chn., American Fork, Utah. Bids Feb. 15. CD 2/24, under LB.

▲ † **George A. Fuller Co.,** 3100 West 8 St., Los Angeles, Calif., CA, **$3,000,000.** Canoga Park PROPULSION CENTER, CALIFORNIA, U. S. Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., D.C. North American Aviation, Inc., Downey, Calif. will operate. Bids Feb. 1. CD 2/17, under LB.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Maurice Moiriat,** 8490 Clark St., Montreal, Que., CA, **$2,200,000.** water mains and sewers, RIVIERE DES PRAIRIES, QUE. Municipality, Riviere des Prairies, Que. J. A. Beauchemin & Assocs., 1610 Sherbrooke St. W., Montreal, Que., engrs. CD 5/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. A. Gauthier,** 4523 de Laroche St., Montreal, Que. Owner Builds. **$2,000,000,** 100-unit, APARTMENT PROJ., Sherbrooke St. E. and Cadillac St., MONTREAL, QUE.

▲ **Robert Treberge Ltd.,** 2112 Frontenac St., Montreal, Que., Owner Builds, **$2,300,000,** 180-cottage HOUSING program on new streets known as "Lafayette Project" Ville Jacques Cartier, MONTREAL, QUE.

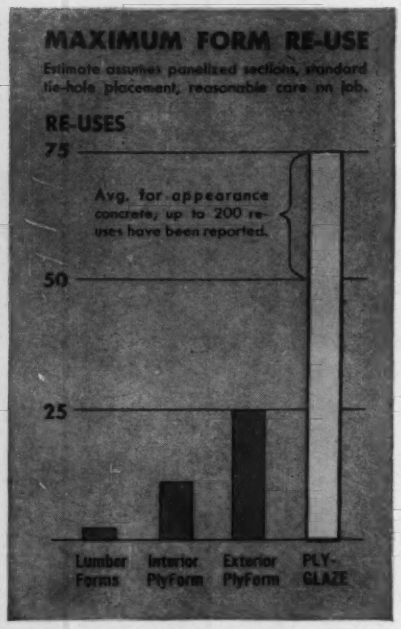
AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Brown & Root, Inc.,** Box 3, Houston, Tex. CA **$3,450,000.** design and construct, dam and irrigation proj. known as "Taunsa Barrage" proj. incl. building and installing 64 gates near Bahlwal, WEST PAKISTAN. Republic of West Pakistan, Dpt. P. Wks., West Pakistan.

(Proposal Advertisements see pp. 148 to 150)



On job after job, concrete form re-use records show...

BETTER "MILEAGE" with PLYGLAZE®

TAKE it from a firm that makes all three kinds of form materials:

Lumber forms are satisfactor[illegible] neither re-use nor appearance [illegible]).

Plywood is much better. (Gives fair re-use, decent-looking concrete.)

PlyGlaze is best by far. (Gives most re-uses, very smoothest concrete.)

Use coupon below for information.

• ST. PAUL & TACOMA LUMBER CO.
Tacoma 2, Washington

Another member of the famous Tree Life Family of Forest Products

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Please send free PlyGlaze literature.

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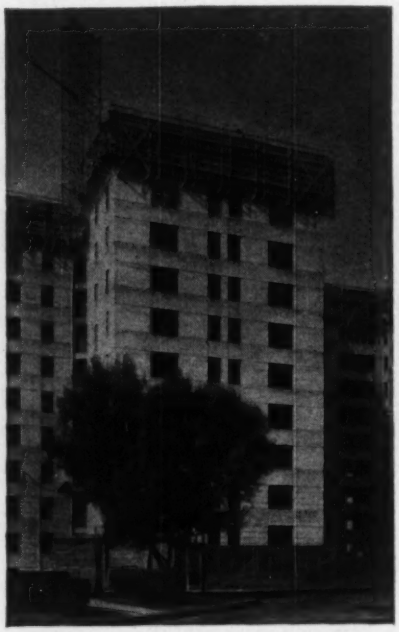
City.....Zone....State.....

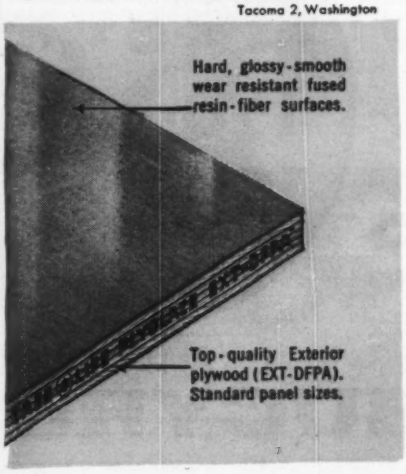


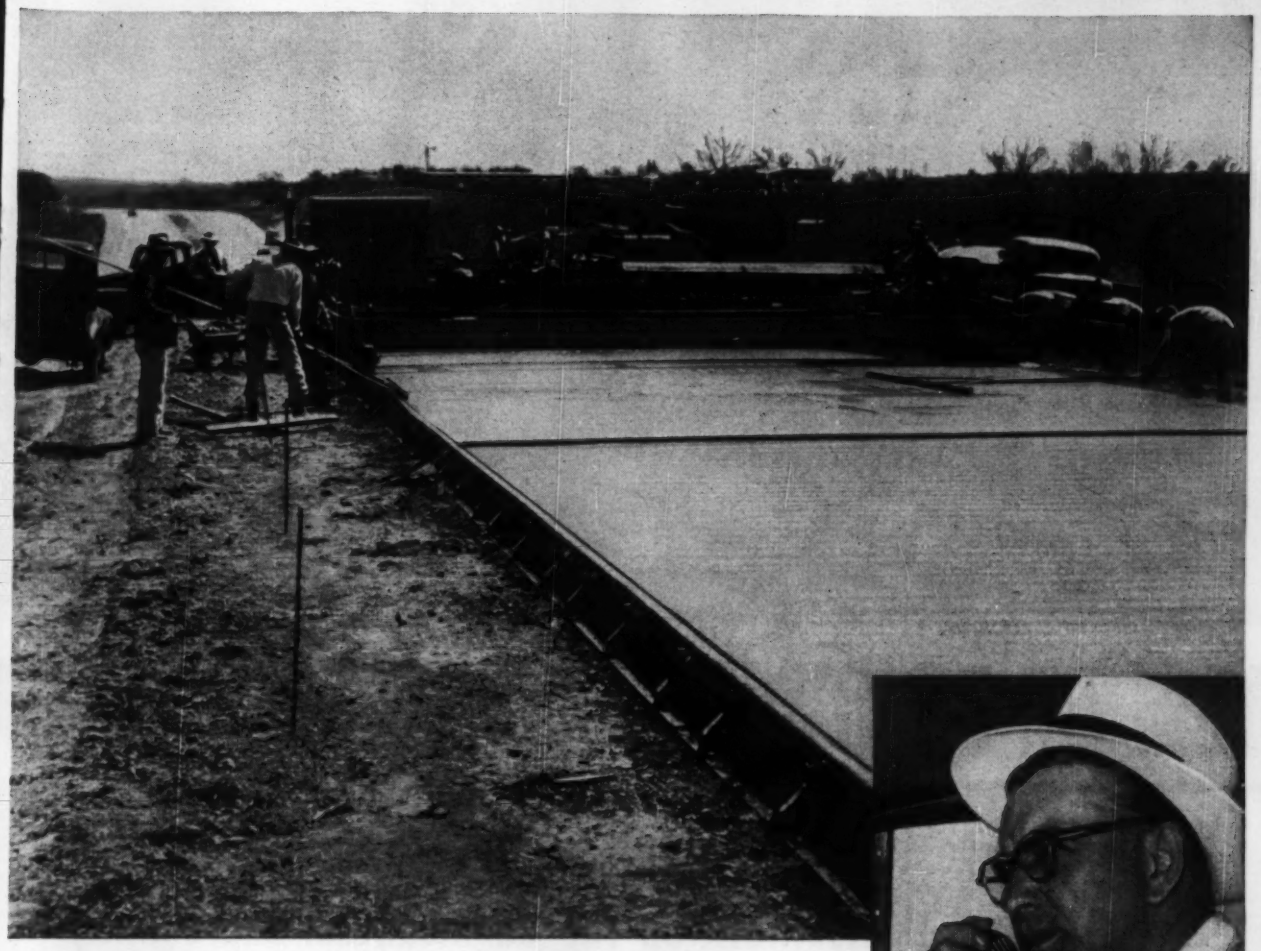
On jobs like famed Parklabrea housing project, users report...

SMOOTHER CONCRETE with PLYGLAZE®

SMOOTH, densified fused resin-fiber surfaces assure finest architectural concrete—flawless and even textured, with no trace of grain pattern, knots or repair plugs. PlyGlaze cuts finishing time and costs. Eliminates expensive plastering. Ceilings and walls can be painted direct after a minimum of finishing. For details see Sweet's Architectural File or write:

• ST. PAUL & TACOMA LUMBER CO.
Tacoma 2, Washington


Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
Top-quality Exterior plywood (EXT-DFPA). Standard panel sizes.



7 REASONS FOR G-E 2-WAY RADIO

- ★ Control field operations
- ★ Save time
- ★ Increase efficiency
- ★ Cut idle time
- ★ Expedite and improve customer service
- ★ Coordinate vehicle dispatching
- ★ Lower costs

A superintendent maintains constant touch with construction headquarters via General Electric 2-way radio . . . and at the same time supervises numerous on-the-job operations.

2-WAY MOBILE RADIO

FREQUENCY STABILITY & SELECTIVITY
guaranteed for life!

THE importance of 2-way radio to you *for any reason* is actually a point in favor of selecting G-E equipment! Radio saves you money. Don't lose this money on an expensive-to-maintain communication system. Buy G-E! Its reputation for low cost maintenance requirements is widely respected throughout your industry! And, radio must perform on-the-job *at all times.* When it fails, your profit takes a beating! Superior G-E design . . . G-E components function to protect profit . . . provide always dependable performance. Select 2-way radio equipment carefully and know why G-E is preferred by leading companies in your business.

For additional details write to: *General Electric Co., Section X2235-10, Communications Equipment, Electronics Park, Syracuse, N. Y.*

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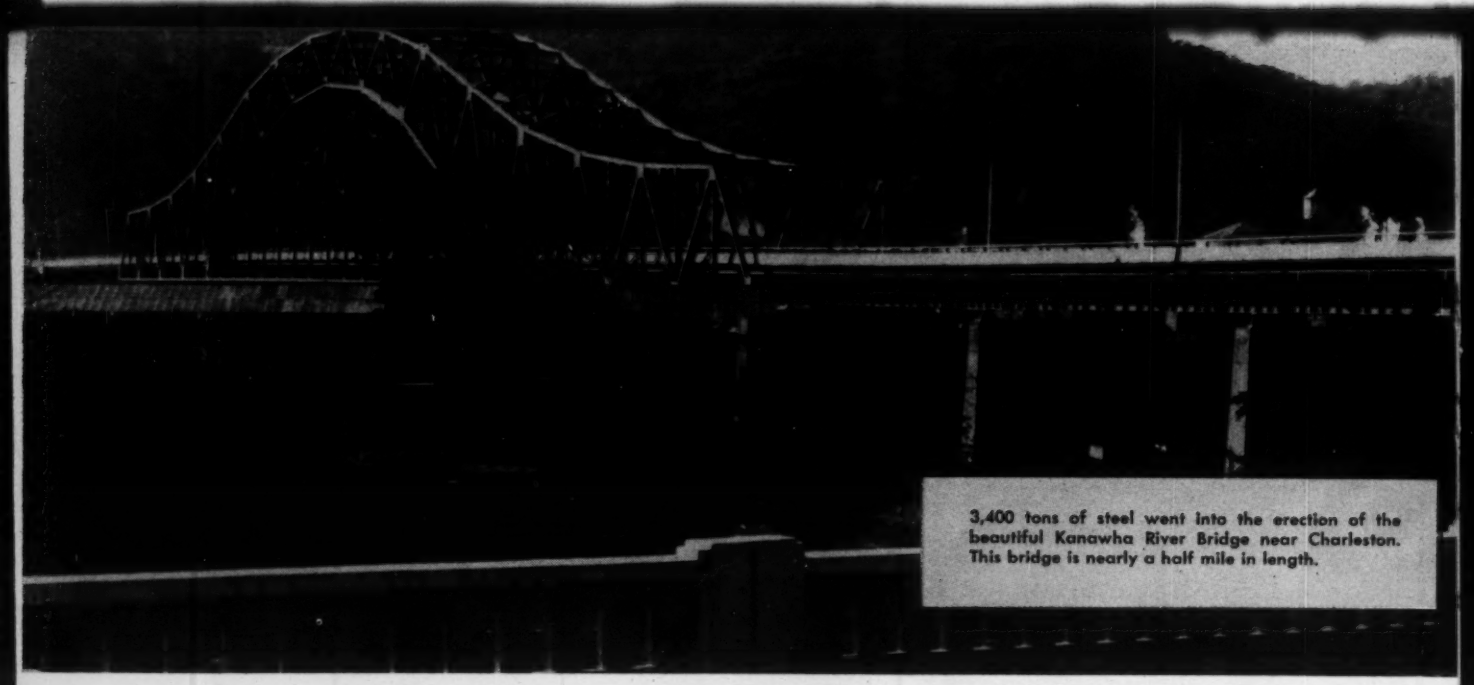
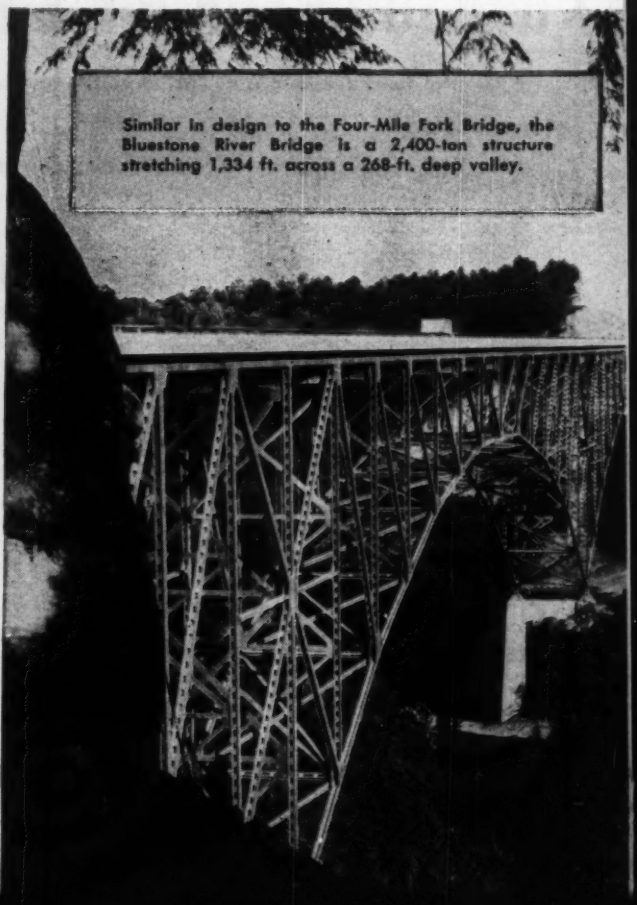
GENERAL ELECTRIC



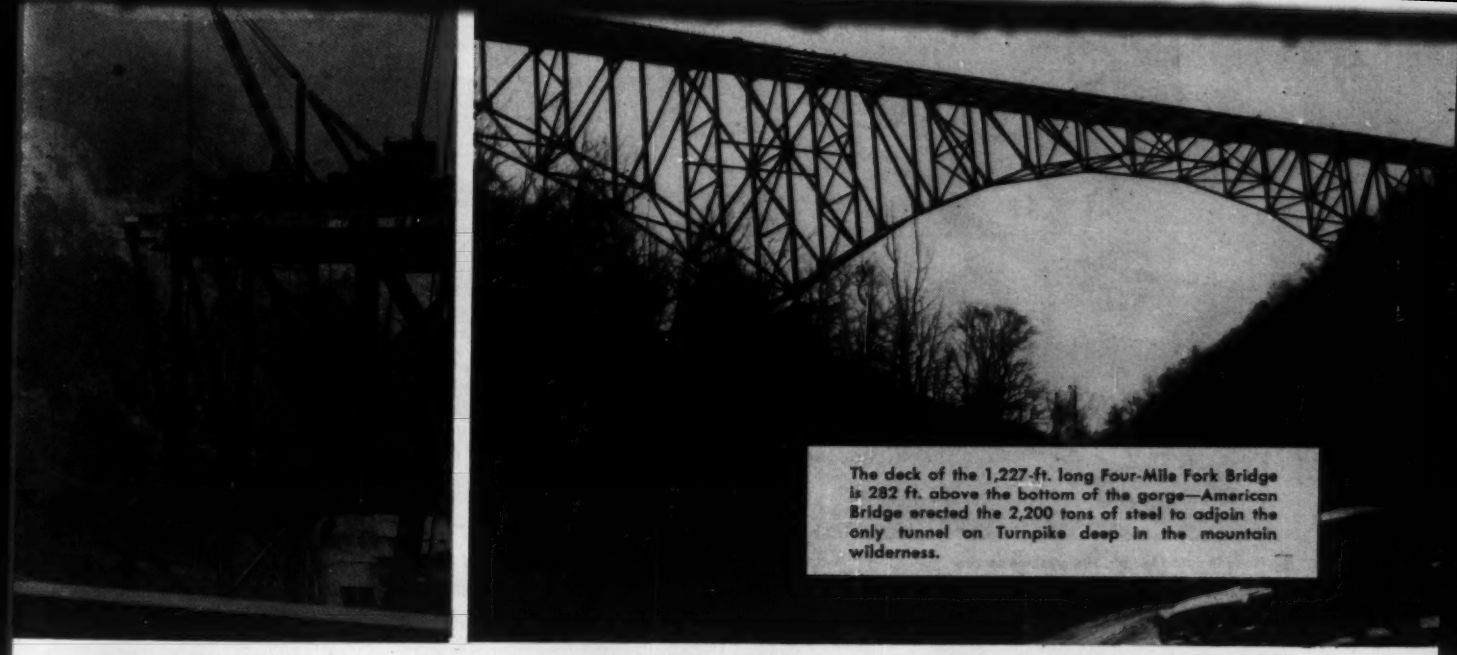
3,400 tons of steel went into the erection of the beautiful Kanawha River Bridge near Charleston. This bridge is nearly a half mile in length.

ALL 76 BRIDGES ON WEST VIRGINIA

World's largest builder of bridges sets record in erecting 19,000 tons of steelwork on rugged mountain expressway



Similar in design to the Four-Mile Fork Bridge, the Bluestone River Bridge is a 2,400-ton structure stretching 1,334 ft. across a 268-ft. deep valley.



The deck of the 1,227-ft. long Four-Mile Fork Bridge is 282 ft. above the bottom of the gorge—American Bridge erected the 2,200 tons of steel to adjoin the only tunnel on Turnpike deep in the mountain wilderness.

TURNPIKE ERECTED IN 11½ MONTHS by AMERICAN BRIDGE

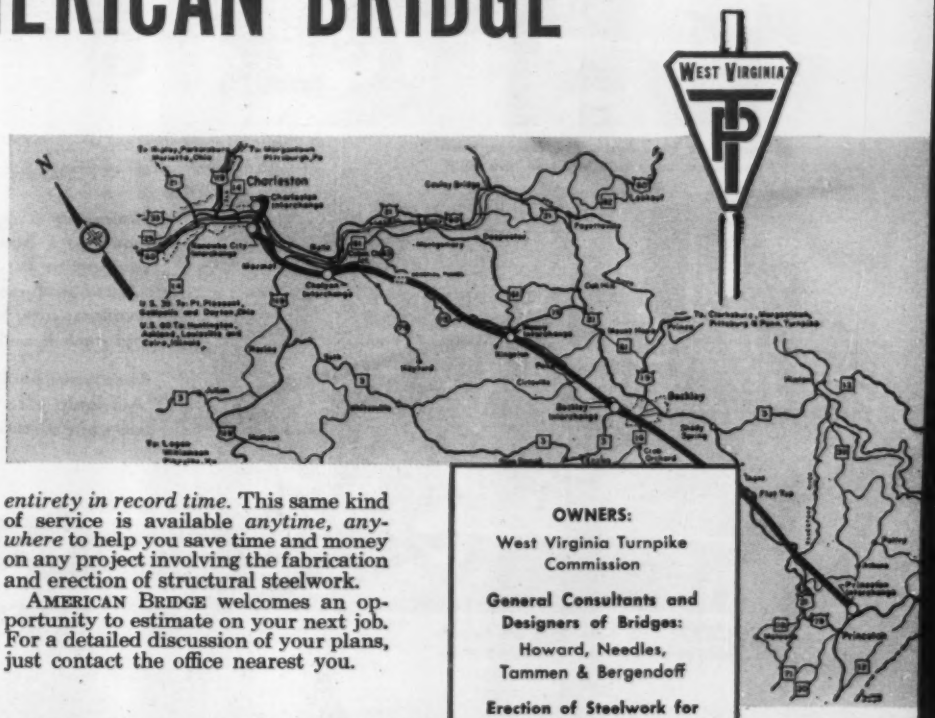
Constructed over, around and under some of the most treacherous mountain terrain east of the Rockies, the new West Virginia Turnpike is one of the nation's best stretches of highway. And one of the most bridged. For it has 76 bridges along its 87-mile length. That's almost a bridge a mile!

But equally interesting is the fact *one single company* erected the structural steelwork for *all 76 bridges.* And did it in just 11 months and 17 days!

AMERICAN BRIDGE put 19,000 tons of structural steel into these bridges, three of which are major structures as you can see from the photographs shown here. The 73 minor bridges averaged 230 ft. in length. In addition to erecting all 76 bridges, AMERICAN BRIDGE fabricated approximately 14,000 tons of steelwork, including the three major bridges.

The engineering "know-how" and the skilled manpower that AMERICAN BRIDGE brought to this vast bridge-building project *enabled this one single company to handle this big job in its entirety in record time.* This same kind of service is available *anytime, anywhere* to help you save time and money on any project involving the fabrication and erection of structural steelwork.

AMERICAN BRIDGE welcomes an opportunity to estimate on your next job. For a detailed discussion of your plans, just contact the office nearest you.



OWNERS:
West Virginia Turnpike Commission

General Consultants and Designers of Bridges:
Howard, Needles, Tammen & Bergendoff

Erection of Steelwork for all Bridges:
American Bridge Division, United States Steel Corp.

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—Consult your newspaper for time and station.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

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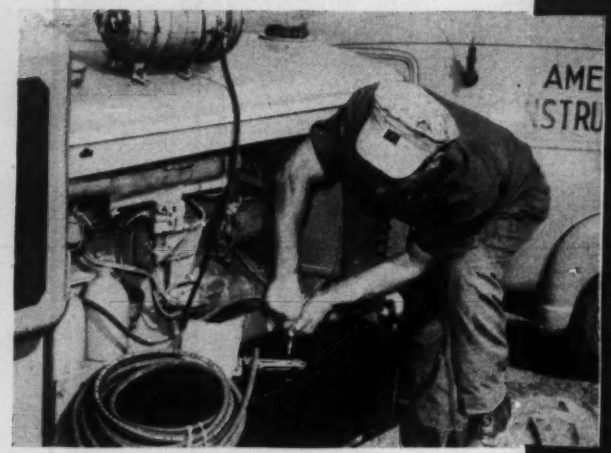
AMERICAN BRIDGE

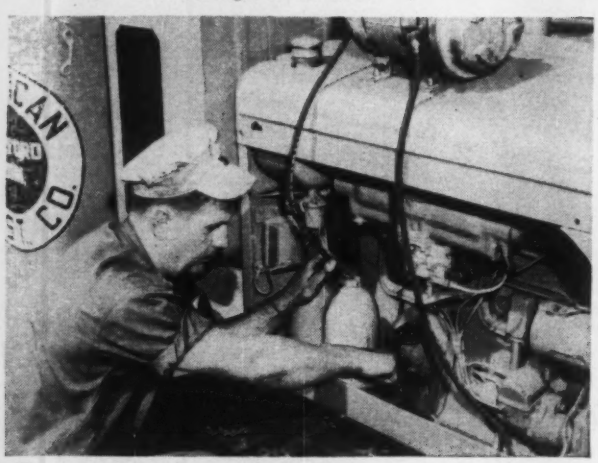
USS

UNITED STATES STEEL



■ Hose is cut to length and pushed on the *SOCKETLESS* fittings by hand.

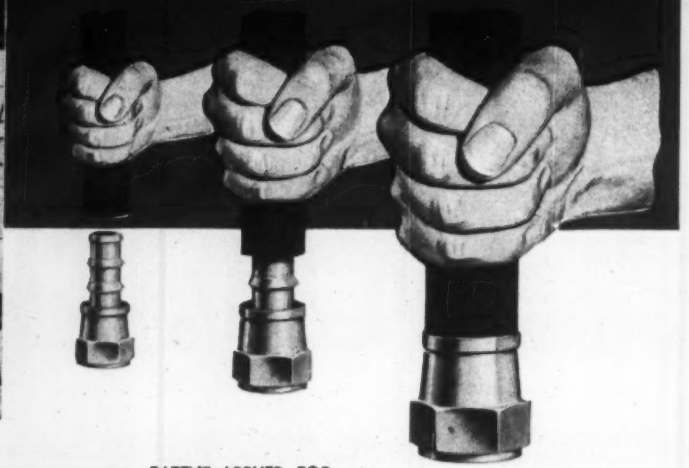
■ With bulk hose and a few fittings, hose lines can be made right in the field.



■ *SOCKETLESS* hose lines are flexible ... easy to install even in confined areas.

Master Mechanic Nick Martino of American Construction Company, Inc., Hartford, Connecticut

Makes and Installs Oil Lines in Minutes!



PATENT APPLIED FOR

"Aeroquip's superior quality hose and reusable fittings mean less headaches due to downtime, and great savings in future replacements," says Mr. Martino. "Aeroquip hose has completely eliminated our stocking problem; now we just cut the length of hose we need and push it on the fittings."

Keep your equipment on the job. Use this cost-cutting 'Aeroquip idea' for all fuel, oil, water, and air lines. See your distributor or write for information.

AEROQUIP

SOCKETLESS

FITTINGS AND HOSE

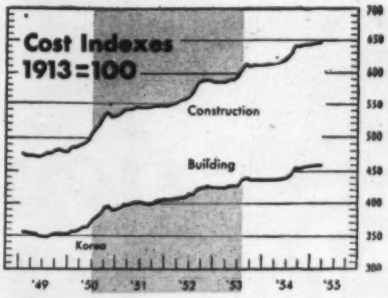
Aeroquip

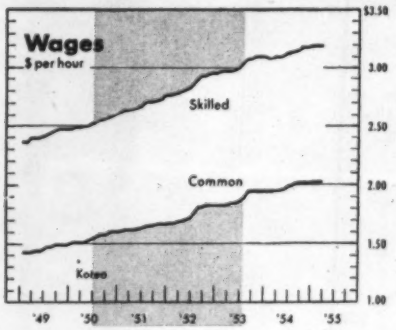
REG. TRADE MARK

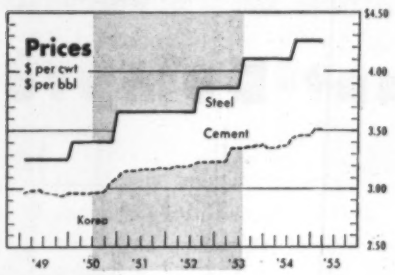
AEROQUIP CORPORATION, JACKSON, MICHIGAN

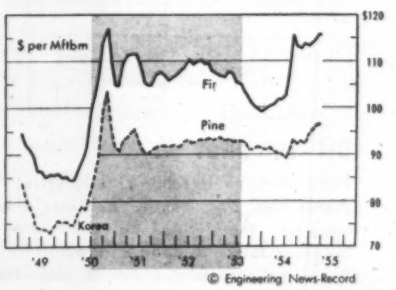
LOCAL REPRESENTATIVES IN PRINCIPAL CITIES IN U.S.A. AND ABROAD • AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

MARCH CONSTRUCTION SCOREBOARD









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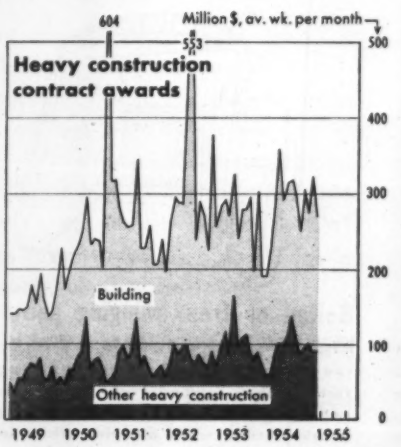


ENR INDEXES (1913=100), 20-cities' average	1955 Mar.	% Change from last Month	% Change from last Year
Construction Cost	645.70	+0.07*	+5.2*
Building Cost	459.63	+0.04	+5.2

*Revised 2/55, 645.24; 2/54, 614.01

WAGE RATES, 20-cities' average			
Common	$2.021	+0.09**	+3.9**
Skilled (aver. 3 trades)	3.190	+0.06	+3.0
Bricklayers	3.457	0.0	+2.6
Structural Ironworkers	3.171	0.0	+3.5
Carpenters	2.941	+0.1	+2.9

** Revised 2/55, 2.019; 2/54, 1.945

MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.523	+0.2	+5.0
Structural Steel, (3-mill aver.), per cwt	4.250	0.0	+3.7
Sand, per ton	2.302	0.0	+4.5
Lumber, 2x4 Fir, per M. ft. bm	115.958	+0.1	+15.2
Lumber, 2x4 Pine, per M. ft. bm	96.466	−0.1	+6.7
Common brick, per M	33.293	−0.1	+1.1
Ready-mixed concrete, per c. y	12.414	0.0	+3.6
Structural Clay Tile, 3x12x12 per M	159.800	+0.7	−0.2

CONTRACTS AWARDED (Millions)	1955 Feb.	1955 2-Mos.	% Change from '54 Feb.	% Change from '54 2-Mos.
Total U. S. (ENR reported)	$1,084.9	$2,380.2	+41.5	+55.3
Private	673.1	1,479.4	+46.5	+82.7
Public	411.8	900.8	+34.1	+24.6
Federal	104.0	267.3	+51.6	+78.5
ENR Volume Index, '13=100	459	509	+33.0	+48.8

NEW CAPITAL (Millions)				
Total	527.1	1,044.6	−3.6	+3.6
State & Municipal Bond Sales	320.4	598.8	+17.8	+28.3
Corporate Security Sales	197.9	429.0	−26.4	−17.8
Federal (non-federal work)	8.8	16.8	+44.0	−13.4
Federal (federal work)	.....	.....	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLIES (millions)	Dec. '54(D) Jan. '55(J)	12 Mos. '54	% Change from Mo.	% Change from Yr.-Cum.
Cement, bbls. Bu. of Mines	16.347(D)	273.981(12)	−28.2	+5.0
Fabr. Struc. Steel, tons AISC	.219(J)	3.136(12)	−11.0	+0.6
Lumber, mil. ft. bm., NLMA	3.074(D)	37.401(12)	+13.6	−2.9
Lumber Prod., mil. ft. bm., NLMA	3.083(D)	37.466(12)	+7.2	−4.6
Contract Const. Employ., BLS	2.350(J)	2.627(12)†	+0.04	−0.6

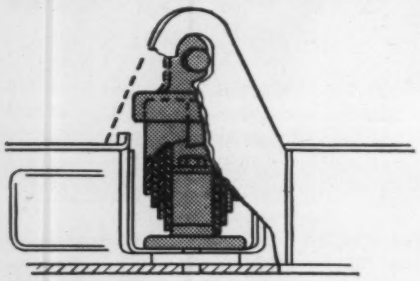
†Average

ENR CONSTRUCTION & BUILDING COST INDEXES IN 21 CITIES (1913=100)

	Construction cost Mar. '55	Construction cost Dec. '54	Building cost Mar. '55	Building cost Dec. '54		Construction cost Mar. '55	Construction cost Dec. '54	Building cost Mar. '55	Building cost Dec. '54
Atlanta	474	474	400	400	Los Angeles	667	667	453	452
Baltimore	574	578	450	455	Minneapolis	697	697	492	492
Birmingham	511	507	423	420	Montreal	541	542*	421	422
Boston	675	671	458	453	New Orleans	522	523	431	432
Chicago	736	734	469	468	New York	747	745	531	528
Cincinnati	645	642	450	445	Philadelphia	696	691	521	516
Cleveland	759	751	472	464	Pittsburgh	657	654*	478	475
Dallas	484	484	402	402	St. Louis	693	687	483	477
Denver	635	632	470	467	San Francisco	658	649	447	443
Detroit	743	729	481	466	Seattle	676	676	414	414
Kansas City	665	663*	468	466					

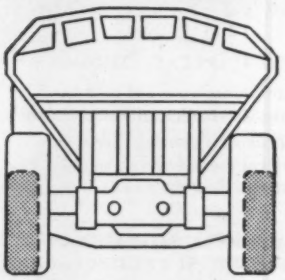
*Revised.

Check all these important Dumptor®



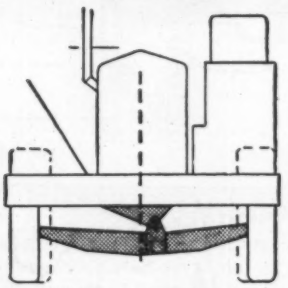
Smooth ride

Heavy, snubber-type spring is mounted between Dumptor main frame and the steering axle. Shock-absorbing action gives plenty of "cushion", takes jolts out of rough, off-road travel. Easy on operator and machine.



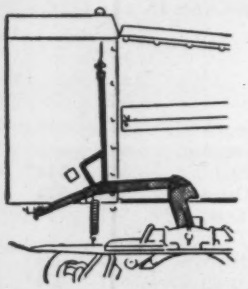
Tires track in direct line

Wider, heavier steering axle puts Dumptor steering wheels in direct line with big drive wheels. Tires track in the same path. There's less rolling resistance — better traction in soft ground and over rough haul roads.



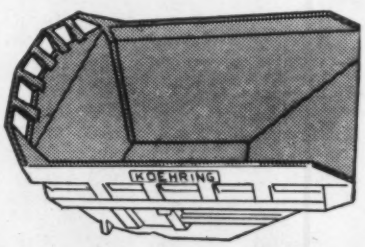
Off-set pivot on axle

Pivot point on steering axle is offset from center line 3¼" toward operator side of machine. There's no sag, even with unbalanced load. Steering axle oscillates 21°, keeps twisting strains out of main frame.



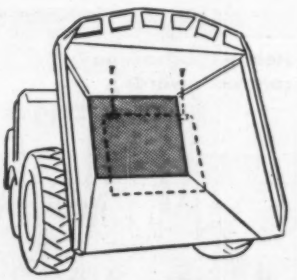
New body-latch, dump lever

Body latch for 1-second gravity dumping is simple, trouble-free. Latch is engaged by a single hook, mounted on the chassis frame. Dump lever is located inside the cab, in an easy-reach position at the operator's left.



Streamlined, all-steel body

Inside is free of bulges or ledges. Top edge is box-beam constructed. Sides, ends are ribbed with 5 and 8" channels. Double-plate bottom is lined with multiple steel beams. Note ridge bar added to rock-guard teeth.



Bolted or free-swinging pan

Heavy steel kick-out pan is ½" thick. Pan can be bolted to body floor for extra protection when loading rock. Remove bolts, and pan has free swinging kick-out action, breaks suction when dumping sticky loads.

CK43

advantages

Take another look at the latest-model Koehring 6-yard Dumptor shown here. It has some important features worth checking . . .

Notice how heavy snubber-spring on steering axle cushions road shocks, yet retains Dumptor's unique advantage of no spring maintenance. There are no leaf springs. Big shock absorbing drive tires eliminate need for springs on drive axle. Alignment of drive wheels with steering wheels adds to efficiency of no-turn shuttle hauling — another basic Dumptor advantage.

Instant gravity-dumping is controlled by simple body latch and new dump lever arrangement. Notice, too, the new streamlined all-steel body. Even with all this heavy-duty strength, Dumptor still has more than 6 h.p. for every ton of loaded weight — accelerates fast, climbs 24% grades fully loaded. See your Koehring distributor for more facts.

KOEHRING COMPANY

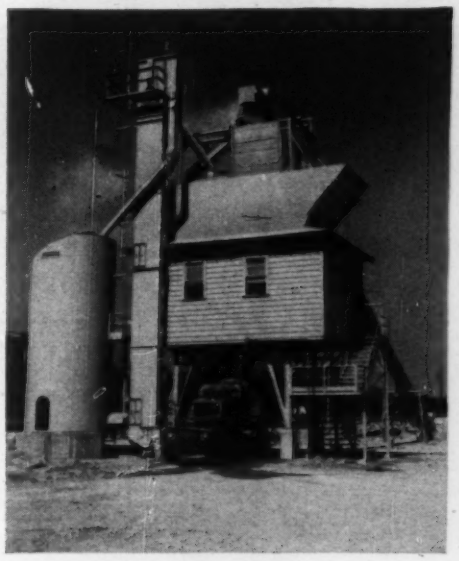
Milwaukee 16, Wisconsin

Subsidiaries:
JOHNSON • PARSONS
KWIK-MIX

Johnson 50 to 125-yd. Roadbuilders plants

Flexible All-Welded Roadbuilders Bin gives you a portable batch plant for 2, 3 or 4 aggregates, or converts to transit-mix (shown) or central-mix plant for bulk cement and 2 or 3 aggregates. Can be equipped with 1 or 2 multiple material Hi-Speed Batchers, size 34 Roadbuilders Batcher, or truck-mixer charging batcher in 2 to 5 cu. yd. sizes. Bin available with 2, 3 or 4 compartments, 50 to 125 cu. yds. Also: silos, elevators, buckets.

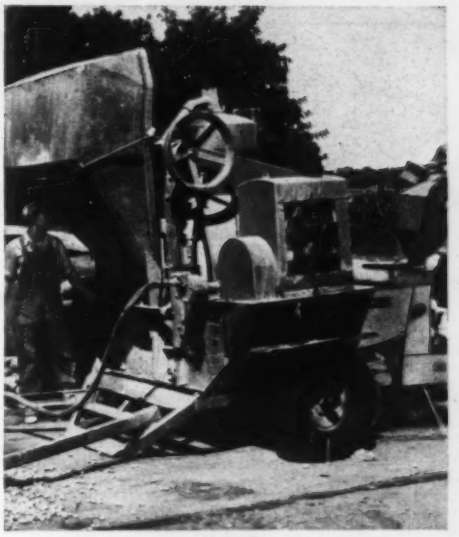
C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)



7-second discharge with Kwik-Mix 11-S

Saving important seconds on every batch of concrete, tilted Flow-Line Discharge Chute pours full 12.1 cu. ft. batch in 7 seconds. Kwik-Mix 11-S Dandie® also has side or end discharge, 2 or 4 wheels, and special tower attachment. Other sizes: 3½-S to 16-S. Also check Kwik-Mix bituminous, tilt and non-tilt plaster-mortar mixers . . . and Moto-Bug® (power wheelbarrow) shown here. Ask your Kwik-Mix distributor for all facts.

KWIK-MIX • Milwaukee, Wis.
(Koehring Subsidiary)



25 feet per minute with 150 Trenchliner®

On drainage, irrigation and utility trenching, 150 wheel-type Trenchliner digs 16 to 26 inches wide, at depths to 5¾ feet. Hydraulic wheel-hoist maintains close grade tolerance. 30 digging feeds range from 12 inches to 25 feet per minute. Has square or round-bottom buckets; gumbo lips or "Tap-In" teeth; 16 or 12-inch crawlers; gas or diesel power. Tile box and chute optional. Parsons line includes 5 other models, all sizes and types.

PARSONS • Newton, Iowa
(Koehring Subsidiary)

Cutting a mountain down to size!

Le Roi Tractair provides low-cost air to help dig 30′-deep cut in hard rock

On this job in Arizona, the mobility of Tractair really paid off. It allowed the contractor to make this 30-ft.-deep drainage cut at the same time he was working on the main part of his contract.

Because Tractair is self-propelled, with a low center of gravity, it travelled over this rocky terrain with ease. There was no tying up of trucks and men to move compressed air and tools to the spot. Tractair, with its 125 cfm capacity, took care of the whole operation. And the savings to the contractor were substantial.

The versatility of Tractair, since it is a combination 35-hp wheel tractor and 125-cfm compressor, can save you money, too. You can use it for drilling, tamping, driving form pins, breaking pavement, and a host of "odds and ends" jobs. Write for complete details.

T-34

LE ROI *Division of Westinghouse Air Brake Co.*

Milwaukee 14, Wisconsin

PORTABLE AIR COMPRESSORS • TRACTAIR • STATIONARY AIR COMPRESSORS • AIR TOOLS • ENGINES

NATION-WIDE SALES-SERVICE NETWORK

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February Contracts Are 42% Above Same Month Last Year

Housing and highways spark the boom, though some other types lag. Middle Atlantic region hits record volume

Heavy construction awards reported to ENR last month totaled nearly $1.1 billion, the second best February on record and 42% ahead of last year's low volume.

Though February volume was down 16% from January, total contracts for the first two months are 55% ahead of last year and only 8% behind the record set in 1953. All major types of work show big gains over last year (table, below).

• **Private work** – Private construction contracts chalked up the second biggest February on record, with awards hitting $673 million. While lower than January, this figure was 46% higher than a year ago.

Private housing continued the boom last month. Total contracts were $435 million – a new record for February and the third highest for any month on record, based on average weekly volume. Commercial building also set a new February high in dollar volume as awards hit $87 million. However, this was below the high rate set during the preceding six months. Industrial awards dropped sharply from January's high volume. The February total was $122 million, slightly below last year and the lowest volume for this month since 1950.

• **Public work**–State and municipal contracts set a new February high. Awards totaled $307 million, less than the heavy January volume, but 29% above a year ago.

Federal awards rang up the biggest February total since 1952. Though the $104-million federal volume was below January, it was 52% above February of last year.

Highway contracts continued their record-smashing pace in February. The total was $121 million, a new record for the month and actually 80% above a year ago. In contrast, non-residential public building awards slumped to only $74 million. And this figure was less than half January's high volume.

• **Regions**–Contract volume for the first two months is up sharply in all regions except the South, which continues to lag behind. Its total is 15% lower than for the same 1954 period.

The biggest gains so far are in the Far West (up 105%), and West-of-Mississippi (up 96%). However, the Middle Atlantic is the only region where contracts are reaching record volume. Awards there are 74% above last year and well ahead of the previous high in 1953.

The West-of-Mississippi is running only a little behind its all-time high for the first two months in 1951. Whereas the Far West is well behind the high levels that were recorded for 1950 and 1953.

Construction Costs Level Off In March at All-Time Highs

Construction costs remained virtually stable this month, as measured by ENR's indexes. The Construction Cost Index for March is 645.70, based on 1913 = 100, less than 0.1% above February. The Building Cost Index is 459.63, also based on 1913. This is also less than a 0.1% gain.

While the indexes scarcely moved this month, they are at the highest level in history. Compared with a year ago, the Construction Cost Index is up 5.2% and the Building Cost Index is also up 5.2%.

The uptrend in lumber prices has leveled off. Fir and pine prices were off sharply in several places, though there were offsetting gains elsewhere. There was only one price change in cement–up 12 cents per bbl. in San Francisco.

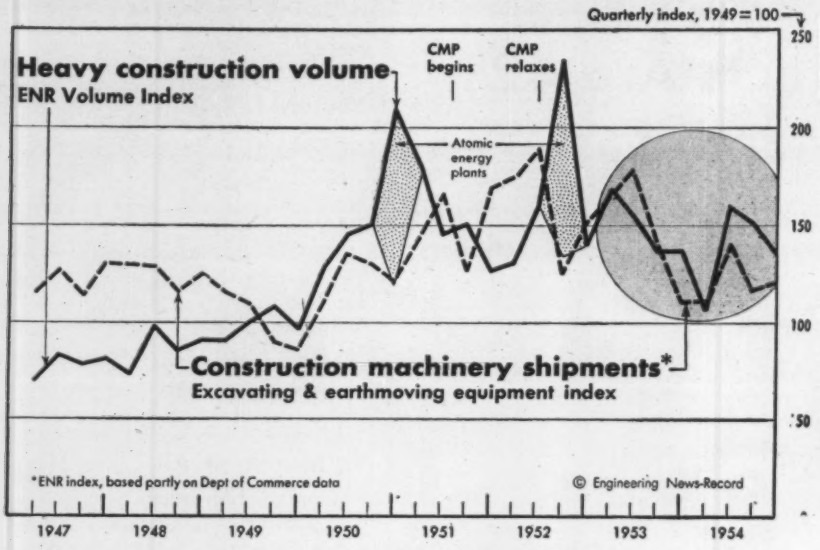
(*B&F continued on page 142*)

ENGINEERING CONSTRUCTION CONTRACTS—FEBRUARY 1955

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000

Four Weeks—Thousands of Dollars (000 Omitted)

	February, 1955							U. S. Cumulative Two Months		% Change	Canada February
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1955	1954	'54 to '55	1955
Public Works											
Waterworks	.....	499	1,695	6,498	9,502	2,172	**20,366**	**49,377**	27,946	+77	1,089
Sewerage	424	6,295	3,388	16,026	5,253	3,320	**34,706**	**56,961**	42,151	+35	389
Bridges	3,355	8,100	12,705	4,423	7,826	3,375	**39,784**	**76,120**	69,239	+10	4,023
Earthwork and drainage	258	13,894	2,900	7	2,249	5,985	**25,293**	**60,128**	46,592	+29	33,824
Streets and roads	16,305	13,492	13,015	22,064	33,083	22,758	**120,717**	**239,460**	172,280	+39	5,436
Public buildings, residential	.....	3,165	769	.....	.....	.....	**3,934**	**8,092**	29,021	−72	446
Other public buildings	5,978	15,379	15,040	11,807	12,526	13,270	**74,000**	**235,284**	215,326	+ 9	2,867
Unclassified	4,896	20,778	20,323	8,016	25,644	13,289	**92,946**	**175,358**	120,527	+45	634
Total public	**31,216**	**81,602**	**69,835**	**68,841**	**96,083**	**64,169**	**411,746**	**900,780**	**723,082**	**+25**	**48,708**
Federal government (included in above classifications)	4,689	19,681	27,112	8,048	25,826	18,691	**104,047**	**267,280**	149,747	+78	2,376
Private											
Bridges	.....	.....	.....	.....	.....	.....	.....	**200**	110	+82	.....
Industrial buildings	2,262	27,322	2,304	26,897	53,110	9,609	**121,504**	**350,033**	212,722	+65	19,572
Mass housing	14,000	167,043	49,049	92,503	74,432	37,652	**434,679**	**877,010**	406,040	+116	72,761
Commercial buildings	4,000	26,478	8,428	13,390	20,340	14,439	**87,075**	**183,588**	159,900	+15	8,175
Unclassified	.....	963	2,000	1,140	21,131	4,636	**29,870**	**68,573**	31,067	+121	1,606
Total private	**20,262**	**221,806**	**61,781**	**133,930**	**169,013**	**66,336**	**673,128**	**1,479,404**	**809,839**	**+83**	**102,114**
Total Engineering Construction:											
February, 1955—4 weeks	**51,478**	**303,408**	**131,616**	**202,771**	**265,096**	**130,509**	**1,084,874**	.....	.....	.....	**150,822**
January, 1955—4 weeks	67,162	408,078	92,449	251,851	302,414	173,356	**1,295,310**	.....	.....	.....	85,535
February, 1954—4 weeks	44,427	184,868	173,229	145,868	159,048	59,161	**766,601**	.....	.....	.....	64,233
Two Months—1955	**118,640**	**711,486**	**224,065**	**454,622**	**567,510**	**303,861**	.....	**2,380,184**	.....	**+55**	**236,357**
Two Months—1954	80,771	407,815	264,225	343,088	288,884	148,138	.....	.....	1,532,921	.....	140,132
% Change '54 to '55	+47	+74	−15	+33	+96	+105	.....	.....	.....	.....	+69



Construction Equipment Industry Perked Up in 1954 Fourth Quarter

Figures on fourth-quarter shipments of construction equipment show that the construction-equipment industry is definitely on its way out of the woods. For the first time since the third quarter of 1953, quarterly shipments have started to climb above the same period of the previous year.

This increase in volume of shipments was predicted earlier by ENR because of the upsurge in new contract awards which started in the second quarter of 1954. During the third quarter, the normal seasonal decline was less than usual (ENR Dec. 2, 1954, p. 79).

ENR's equipment shipments index—adjusted for changes in dollar purchasing power—rose to 121.2 during the last quarter. This index is based on 1949 = 100. The present level is 4.5% above the third quarter and 10.2% higher than 1953's poor fourth quarter. So the equipment index has moved closer to ENR's construction volume index which it has followed quite closely since 1949.

• **Tractors provide push**—Increases of 15% in dollar value of wheel-type tractors and 11% in tracklaying tractors were mainly responsible for the good showing in the fourth quarter. However, shipments of heavy off-highway trucks and trailers were also up 17.3% over the third quarter.

Dollar volume of shipments of other major types of equipment were about the same as in the third quarter. However, by comparison with the last quarter of 1953, road construction and maintenance machinery was up 32%. Machinery for mounting on tractors (mainly bulldozers) was up 13%.

Court Action Seen Speeding Florida Highway Project

The Florida State Supreme Court, in validating bond issues totaling $9.5 million by three counties, last week had given a heavy push to state plans for a $35-million project to improve U.S. Route 1.

The bond issues—$4 million each for St. Johns and Brevard Counties, and $1.5 million for Flagler County—will comprise the counties' share of the costs of four-laning the highway through the three areas. The state will match the funds. A fourth county bond issue—$8 million by Volusia County—has been held up in court procedures but is expected to be validated in the near future.

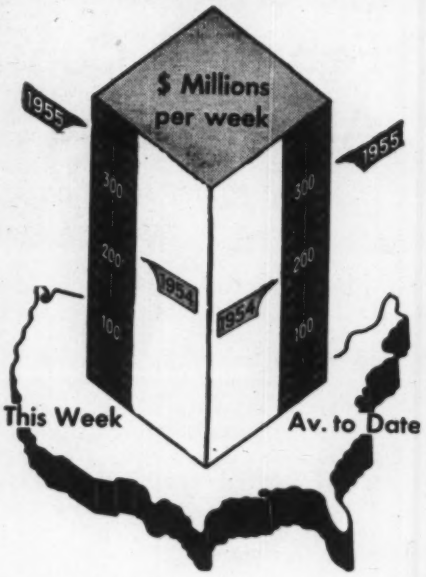
Bonds are to be backed by surplus gasoline tax monies received by the counties from state collections.

Private Pikes Start Work

The two private Texas turnpike companies have started preliminary work on their proposed toll roads, though dates for financing are still uncertain. Work was begun to get in under a Feb. 25 deadline which the groups had to meet in order to hold their exclusive franchise. The Texas Turnpike Co. plans a route from the Dallas-Ft. Worth area to Houston, and the Sam Houston Turnpike Co. would build from Dallas to Waco.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 10 wks 1955	1954	% chge
Federal	$28.0	$318.9	$177.8	+79
State and municipal	91.5	849.6	731.9	+16
Total public	119.5	1,168.5	909.7	+28
Total private	238.7	1,943.1	1,057.9	+84
U. S. Total	$358.2	$3,111.6	$1,967.6	+58
Contracts by type of work				
Waterworks	$1.7	$53.8	$38.0	+42
Sewerage	8.6	72.8	57.1	+27
Bridges	7.3	97.1	88.2	+10
Highways	27.3	319.5	222.2	+44
Earthwork, waterways	9.6	71.6	54.8	+31
Buildings:				
Public, excl. hsg.	37.9	305.6	275.1	+11
Housg., public	11.9	34.5	35.0	−1
Housg., private	177.0	1,215.0	563.9	+115
Commercial	32.7	250.5	190.9	+31
Industrial	17.6	388.8	261.4	+49
Unclassified	26.6	302.4	181.0	+67
Total	$358.2	$3,111.6	$1,967.6	+58

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other bulidings, $344,000.

New capital for construction

(millions of dollars)	Week of Mar. 3 1955	Cumulative 9 wks 1955	% chge '54-'55
Corporate securities	$82.2	$511.2	−5
State and municipal:			
All except housing	76.9	640.1	+9
Housing	...	35.6	+7
Federal loans	...	16.8	−13
Federal aid	...	...	...
Total non-federal	$159.1	$1,203.7	+3
Federal appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	$159.1	$1,203.7	+3

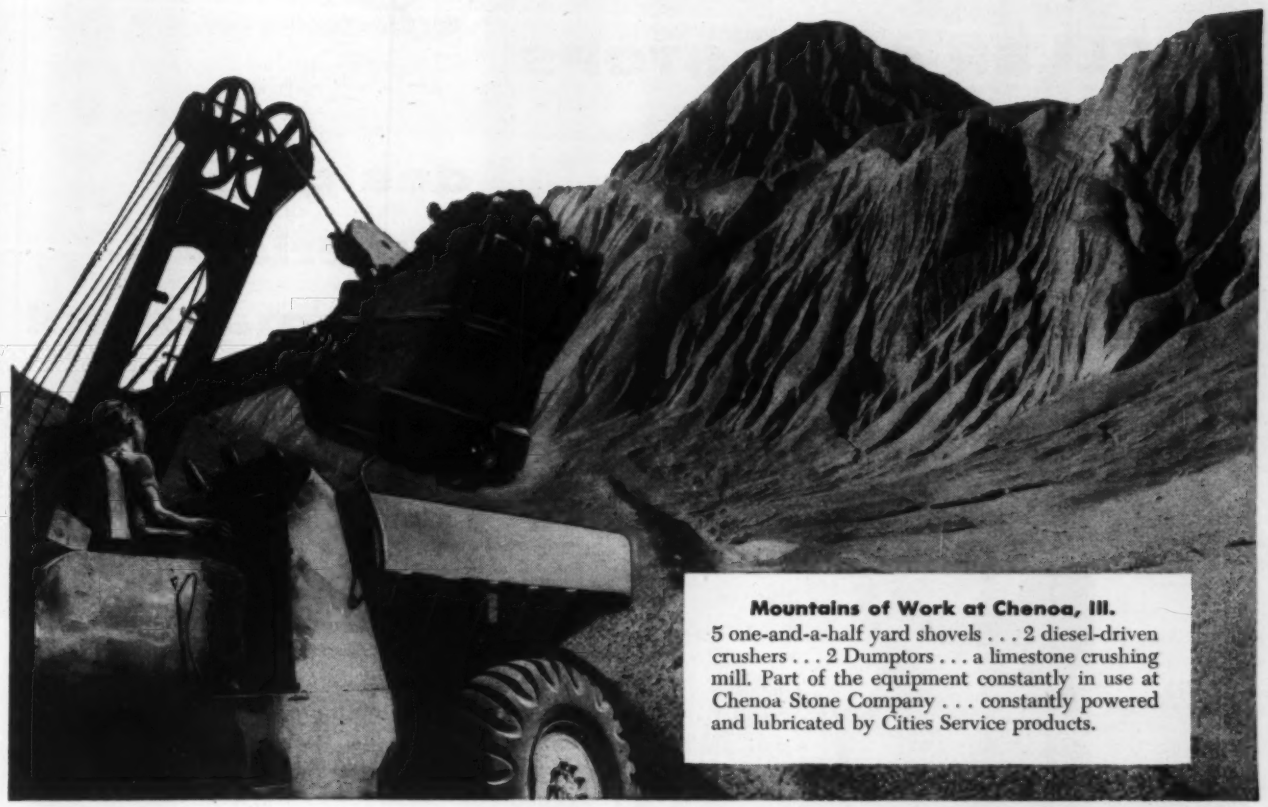
ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	3/3†	645.70	310.39	135.36
	2/3†	645.24	310.17	135.26
Building cost	3/3†	459.63	248.46	130.65
	2/3†	459.43	248.35	130.60
Volume	Feb.	459	187	133
	Jan.	560	228	162

† Official monthly indexes for Mar. & Feb.

Cities Service C-300 cuts make-up oil 600%!

Stone cold facts from the
Chenoa Stone Company, Chenoa, Illinois



Mountains of Work at Chenoa, Ill.
5 one-and-a-half yard shovels . . . 2 diesel-driven crushers . . . 2 Dumptors . . . a limestone crushing mill. Part of the equipment constantly in use at Chenoa Stone Company . . . constantly powered and lubricated by Cities Service products.

Here's the story in the words of David D. Vickrey, Superintendent of Chenoa Stone Company:

"About two years ago, we switched from another nationally prominent brand oil to Cities Service C-300 Series Motor Oil. The results have been amazing.

"C-300's detergent action completely eliminated a bothersome sludge problem. On our first three oil changes with it, we removed 5 gallons of sludge from each of our 200 horsepower diesels. Since then, these diesels have remained clean, and today, when we open the crankcase, we can even see the paint.

"We also are using far less oil between changes. In fact Cities Service C-300 actually cut make-up oil from 5 to 6 gallons every 150 hours to less than one gallon every 150 hours!

"In addition to C-300 oil, we use Cities Service Lubricants for every requirement... Diesel Fuel, Gasolenes, Trojan M Grease and hydraulic fluid. We have been completely satisfied with every product.

"Cities Service has given us top-notch service, the best we've ever had. We are better supplied than ever and have learned to rely on Cities Service dependability."

There is nothing Cities Service could possibly add to Mr. Vickrey's statement, except a reminder to contact your local Cities Service representative in order that you may enjoy similar results in *your* operation. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

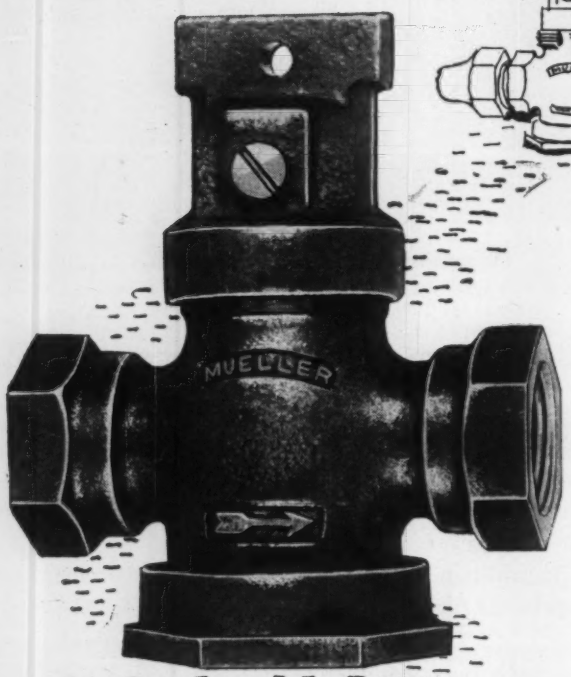
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

MUELLER CURB STOPS

for the finest in...

design...
materials...
workmanship!



Since the founding of Mueller Co. in 1857 by Hieronymus Mueller, the inventor of the tapping and inserting machine and many other products for the water industry, Mueller Co. has been a pioneer in the development of water works products of the highest quality. The quality material and design of present Mueller water works brass goods are a direct result of these years of patient research and testing in the laboratory and in the field.

And, the art of combining fine designs and materials into quality finished products has been an earnest endeavor of Mueller Co. for nearly a century. A great fund of production techniques and craftsmanship makes possible precision brass goods that must pass rigorous tests before they are released to the trade.

Mueller Curb Stops are typical of the excellent design, materials and workmanship found in all Mueller products—many of which have been chosen as "standards" of the Water Works Industry throughout the United States, Canada and many foreign countries.

MUELLER CO. *Dependable Since 1857*
Main Office & Factory Decatur, Illinois

Storm in Cleveland

New wage demands stir up builders, public opinion

Contractors in the Cleveland, Ohio, area are preparing for a stiff fight with the building trades when contract negotiations get underway this spring.

The carpenters district council and spokesmen for the bridge and structural ironworkers union have served notice they will press for a wage hike of 25 cents an hour. Other unions in the building trades are expected to follow their lead.

Their contracts, and those of the rest of the building trades, expire May 1. It is expected that a settlement of about 12½ cents, the amount of the last increase, will be reached.

Most vociferous opponent of the prospective demand is the Home Builders Association, which will negotiate separately from the Building Trades Employers Association under a standing agreement with the building trades. It has expressed its opposition to any increase but has little confidence in its ability to hold the line. Its chief concern is that industrial and commercial contractors, claimed to be better able to pass the increased costs on to consumers, will quickly yield and render further opposition futile.

In its drive against rate increases, the association has enlisted the support of public opinion. One of its strongest allies is the Cleveland newspaper, The Plain Dealer, which has editorially attacked the unions' position as a "holdup."

Noting that the proposed increase is not justified either by an increase in the cost of living or by greater productivity on the part of labor, it points out that higher wages could have a depressing effect on the construction industry and be detrimental to the trades as well to consumers.

Rates for the Cleveland building trades, now among the highest in the nation, range from $2.575 an hour (laborers) to 3.375 (bricklayers).

Milwaukee Contractors Realign for Labor Talks

In an effort to present a united front to labor, contractors in Milwaukee, Wis., have altered the structure of their Building Trades Employers' Association. What they finally have come up with is the Allied Construction Employers' Association, which is composed solely of contractor associations.

Weakness of the old organization lay in the fact that its membership consisted of individual contractors and did not represent a majority of the area's building trade employers. The result was that non-member contractors, rather than the association, often set the pace in labor contract negotiations.

One of the requirements of the new association is that member contractor-groups obtain the association's prior approval of the terms of labor contracts being negotiated on a group basis. The goal is general agreement on and uniformity of wage rates and fringe benefits for the area.

Labor policies of the association will be set by a special committee coordinating the activities of contractor committees negotiating agreements with individual local unions.

Southern Tile Contractors Set Up Apprentice Program

A college training program for future tile setters, believed to be the first of its kind in the U. S. has been established at Berea College, Berea, Ky., by the Southern Tile Contractors Association. Its purpose is to recruit new tile setters and to raise the level of the trade.

Under the two-year program, in which 40 men are now enrolled, students will receive both formal academic schooling and special training in tile setting, combined with on-the-job training during summer vacations. Becoming apprentices upon completion of the course, graduates will qualify as journeymen tile setters after a subsequent two-year apprenticeship toward which time spent in the Berea program will be counted.

Study materials and a tile setting instructor are furnished by the association.

Squeeze Play in Kansas

Operating engineers may find themselves uncomfortably in the middle of a pay dispute on the multi-million-dollar Kansas Turnpike project.

The Turnpike Commission has made it plain that it will not approve overtime anywhere except possibly in one or two metropolitan centers. The union's international has demanded double time must be paid after eight hours.

Locals of the union, anxious to get their share of the work, have been seeking a contract rate of $1.89, which is about a dollar less than in the Kansas City area.

Contractors have said they can get along without the union's hoisting engineers and indicate they'll train men of other crafts to do the work, if necessary.

New Toledo Committee Hears Jurisdictional Disputes

Toledo's Building Trades Council and the Joint Conference Board of the Toledo Building Congress have streamlined their machinery for settlement of jurisdictional disputes.

Patterned after the New York City system, in successful operation for over 50 years, the new agency is a three-man committee of local contractors appointed by the chairman of the Joint Conference Board.

Settlement of disputes on the basis of written briefs submitted by the conflicting unions will first be attempted by the secretary of the Building Trades Council. If he fails to effect a settlement, the briefs go to the new committee. Appeals from its decision may be taken to the national board. In the meantime, construction continues without a stoppage.

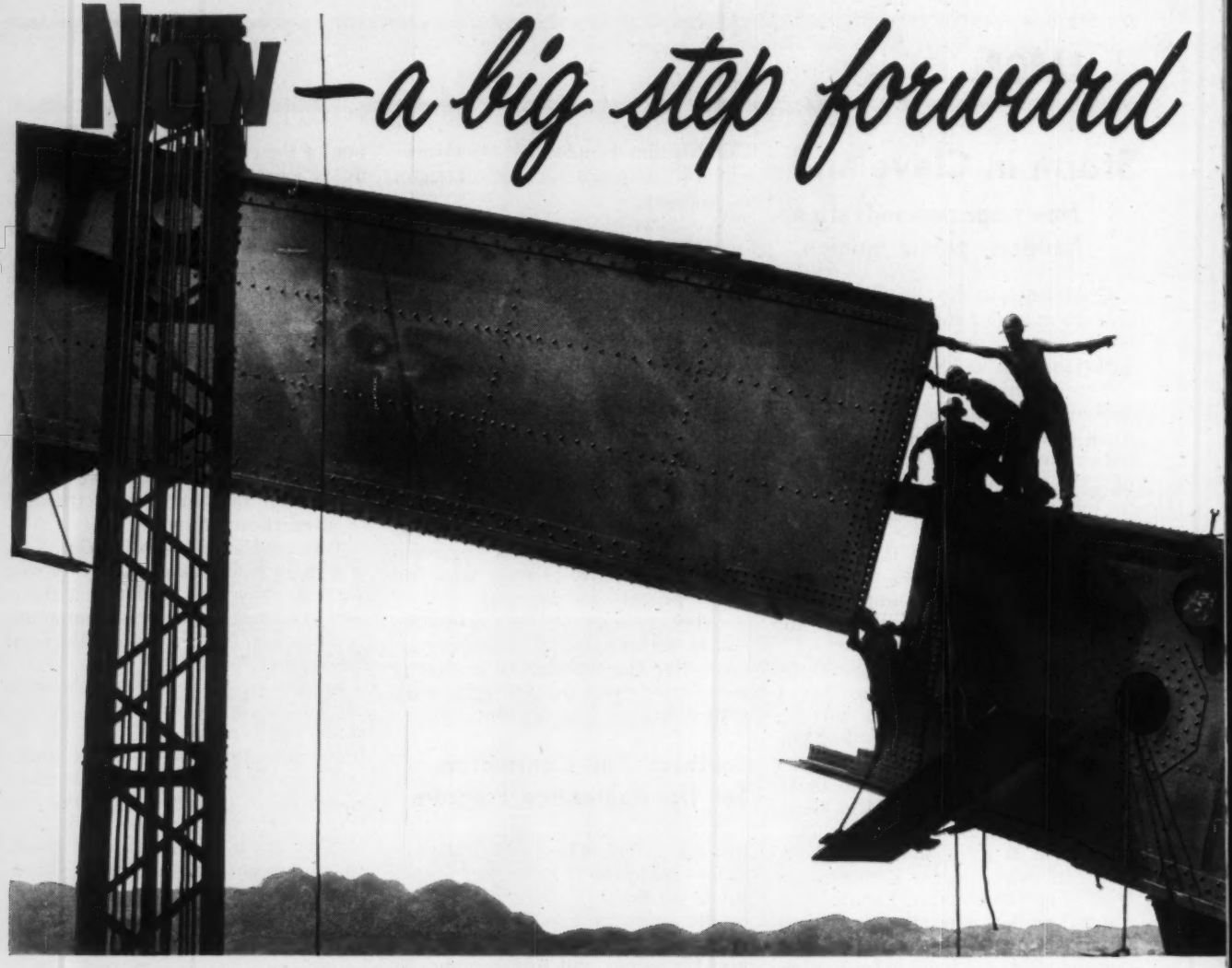
Labor Briefs . . .

• **Force account**—A $50,000 suit by Owens-Corning Fiberglas Corp. against seven unions of the Newark, Ohio, Building Construction Trades Council has been settled. Unions had picketed in protest against use of force account labor and the company sued for damages.

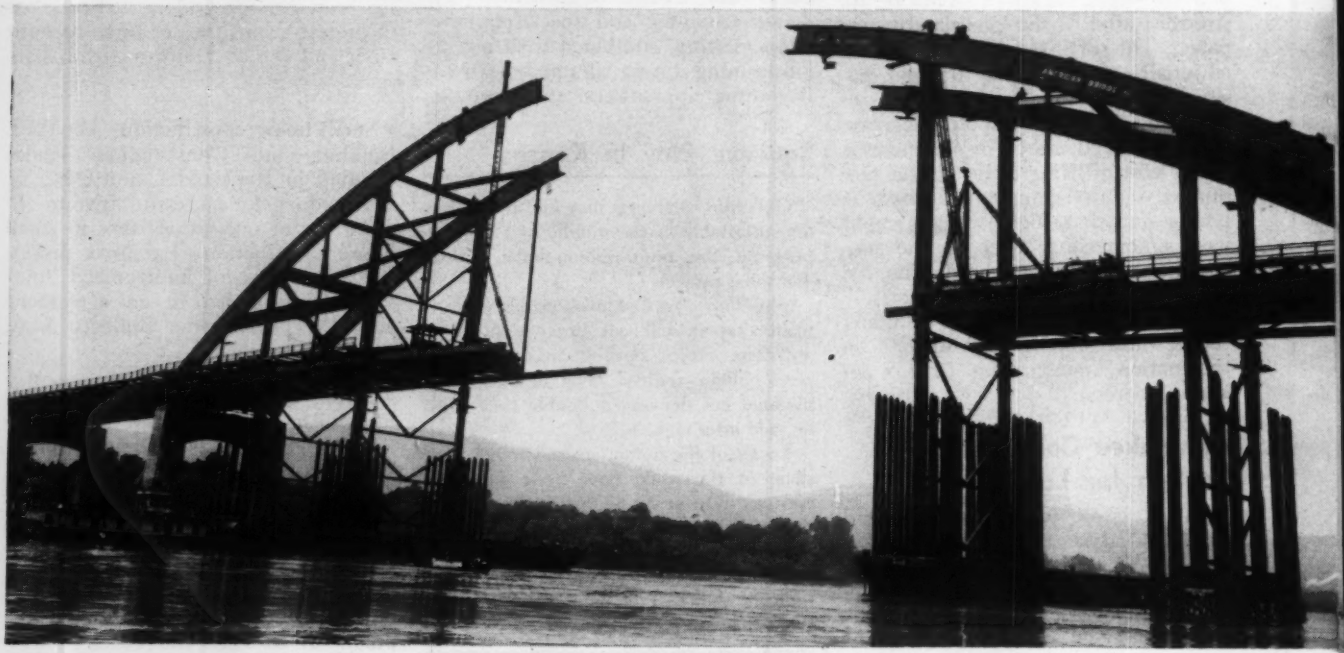
• **Small house construction**—The AFL Building and Construction Trades Council in Rockland County, N. Y., has conducted a successful drive to cut down use of non-union labor in small house construction. Extensive picketing against use of unorganized "outside" labor ended in an agreement with the local Home Builders Assn. to run union jobs.

• **Home financing**—Use of multi-million-dollar pension fund accumulations to finance construction of homes for union members is under consideration by the West Coast ILU. Two subdivisions in San Francisco and one in southern California are planned. Actual construction would be financed by the pension funds and union members would finance their purchases through the FHA.

Now—a big step forward



2,500 tons of USS MAN-TEN Steel—45% of the total structural steel involved—are used in this bridge spanning the Ohio River at Wheeling, W. Va. Used in the main stress-carrying members of the 580 ft. tied-arch span and for the main members of the 160 ft. to 200 ft. continuous girder spans in the approaches, USS MAN-TEN Steel gave the bridge engineers the advantages of higher yield point, greater durability and twice the atmospheric corrosion resistance of ordinary construction. It also provided the fabricator with a more easily fabricated steel at a savings in cost of material.



in bridge construction...

USS High Strength Steels

...that pay off in greater strength, easier fabrication, high corrosion resistance and lower costs

SOMETHING new and important has been happening to bridge structures. Improved design, improved fabrication techniques, improved erection methods, and lower costs—all made possible by increasing use of *stronger, more durable steels.*

For in high strength steels, like USS MAN-TEN, USS TRI-TEN "E" and USS COR-TEN, bridge engineers have found superior materials of construction with which they can build safer, more dependable structures for long term, continuous operation, often at lower costs than hitherto.

A number of bridges, both large and small, have already been constructed with these high strength steels. In many of the most important bridges now being erected or projected for the future, these superior steels are being used or are specified. And for good reason.

All these famous "steels that do more" have higher yield points than structural silicon steel in thicknesses up to and including 1½". All have at least twice the atmospheric corrosion resistance. All, regardless of thickness, have greater ductility.

As a result, their use in structural members makes it possible for the designer to obtain greater strength with no increase in weight, or to reduce weight without any sacrifice in strength. And always, to ensure greater durability.

Maximum results can be obtained from these steels by taking advantage of their specific characteristics. For example, USS MAN-TEN Steel is intended primarily for use in structural members of riveted and bolted bridges requiring high strength with atmospheric corrosion resistance equal to that of copper steel.

While USS TRI-TEN "E" Steel can also be used for riveted bridges, it is particularly applicable where *weldability* is a primary consideration, and where structural members must withstand moderately severe impacts in low temperature service. This steel combines high strength and unusual toughness with atmospheric corrosion resistance equal to that of copper steel.

USS COR-TEN Steel — which has two to three times the atmospheric corrosion resistance of copper steel—can be relied upon to materially prolong life wherever corrosive conditions are severe. For instance, it can be used for blast plates on bridges passing over railroads and for ballast plates on railroad bridges.

SOON TO BE ISSUED . . . Our new *"Design Manual for High Strength Steels"* contains comprehensive and practical information that you will find extremely useful in designing your products for greater economy and efficiency by the sound use of high strength steels. Watch our future advertisements for the announcement of the availability of this important publication.

New 9th Street Bridge at Wheeling, West Virginia

Now nearing completion, the new Ohio River crossing illustrated here is a typical example of the growing use of USS High Strength Steels in present-day bridge construction.

Owner: State of West Virginia

Consulting Engineers: Howard, Needles, Tammen & Bergendoff, Kansas City, Missouri

USS MAN-TEN Steel spans fabricated and erected by American Bridge Division of United States Steel.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS MAN-TEN • USS COR-TEN • USS TRI-TEN

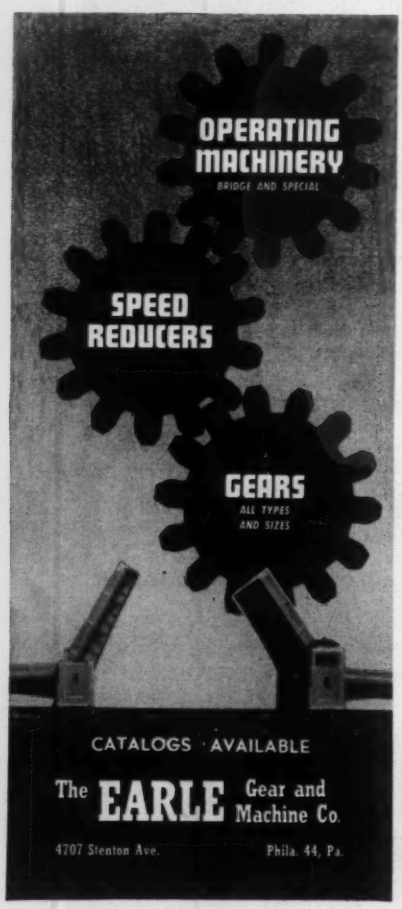
USS

UNITED STATES STEEL

IS OUR **WHEELER**
SOUND POWERED
Electric TELEPHONES

- NO BATTERIES. No outside power.
- LOW in FIRST and LAST COST.
- CLEAR SPEECH. CLEAR SIGNAL.
- ALWAYS READY IN EMERGENCY.
- No electrical hazard.
- UP TO 12 stations intercom.
- SIMPLE standard WIRING.
- Corrosion-resistant construction.

Write for full information and prices.
ASK ABOUT NEW EXECUTIVE-TYPE CRADLE PHONE.
Built and Guaranteed by
the WHEELER INSULATED WIRE CO., INC.
DIVISION OF THE SPERRY CORPORATION
1126 East Aurora Street, Waterbury 20, Conn.



OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: March 29, 1955

Contract NYA-540.003

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
PIPING FOR FUEL STORAGE TANKS

Sealed proposals for the furnishing and installation of piping and utilities for fuel storage tanks at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 29, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 10, 1955

U. S. Government

Bureau of Reclamation, North Platte River Projects 22455—P8, Casper, Wyoming. UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 703S-366 for furnishing and delivering evaporative cooler units for synchronous condenser for Gering Substation, Transmission Division, Nebraska, Missouri River Basin Project, will be mailed to Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 2:00 p.m., Mountain Standard Time, March 24, 1955, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the invitations may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, Projects Manager, Box 280, Casper, Wyoming. No charge for copies of the invitations furnished for bidding purposes; for all others $0.50 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4362), will be received at Palisades, Idaho, until April 14, 1955, for furnishing labor and materials for earthwork and structures, relocation of Wyoming State Highways, U. S. No's. 26 and 89, State Line to Station 2297+00, Palisades Reservoir, Palisades Project, Idaho. Location near Alpine, Wyoming. Principal items are 142,000 cu. yds. excavation; 4,100 cu. yds. gravel fill; 1,620 lin. ft. culvert pipe, 18- and 24-inch; 33,000 lin. ft. construction fences; and other work. Completion time 250 days. For particulars, address Bureau of Reclamation, Palisades, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Bids: March 24, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-10B

Proposals are invited for Contract No. N-10B which involves the construction of the concrete decks, and other incidental work, for the Newark Viaduct extending from Pier W45 just west of Doremus Avenue to Pier W93 located on the east side of the Newark Airport Interchange of the Turnpike; and for the viaducts, at the Newark Airport Interchange and west of Pier W93, for Ramp E, Ramps F and H, Ramp G, and a portion of the Newark Bay-Hudson County Extension; in the City of Newark, Essex County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The Principal items of work include:

Concrete	17,300 Cu. Yds.
Reinforcement Steel	3,950,000 Lbs.
Erecting Metal Railing	13,370 Lin. Ft.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 O'clock, Eastern Standard Time on the morning of March 24, 1955, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract Documents may be examined during office hours after March 3, 1955 at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract Documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract Documents are not required to be returned, and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

March 1, 1955

Bids: April 7, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge Construction for a section of the Massachusetts Turnpike in the Town of Sturbridge (CONTRACT NO. 51-072) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 2:00 P.M. of Thursday, April 7, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

Proposal guaranty: $135,000.

Charge for plans and proposal forms: $50.00, not refundable. Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts; and at office of Section Engineer: Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
February 26, 1955.

OFFICIAL PROPOSALS

Bids: April 5, 1955

Contract Na-290.001

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
TAXIWAY "N"

Sealed proposals for the construction of Taxiway "N" at Newark Airport, Newark, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 5, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, March 10, 1955

Bids: April 5, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for the construction of the Westfield River Bridge in the Towns of Russell and Montgomery (CONTRACT NO. 51-040) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 11:00 A.M. of Tuesday, April 5, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

Proposal guaranty: $85,000.

Charge for plans and proposal forms $35.00, not refundable. Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: and at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
February 26, 1955

Bids: March 31, 1955

Sewage Treatment Project City of Fredericksburg, Virginia

Notice of Letting

Sealed proposals for the furnishing of materials and labor to construct the Sewage Treatment Project of the City of Fredericksburg, Virginia will be received from qualified bidders at the City Hall, Fredericksburg, Virginia until 2 P.M., Eastern Standard Time, March 31, 1955 at which time and place they will be publicly opened and read.

Each proposal shall be submitted in a sealed envelope marked "Sewage Treatment Project, Fredericksburg, Virginia", and shall also be marked with the name of the contractor and the Virginia contractor's license number. If the proposal is forwarded by mail, it shall be enclosed in an additional envelope addressed to the City Manager, City of Fredericksburg, Virginia. If submitted other than by mail, it shall be delivered to the City Manager's Office, City Hall.

The work to be done under this contract embraces the construction of the following: Reinforced concrete and masonry sewage pumping station; reinforced concrete grit removal structures and screenings shredder, two reinforced concrete primary settling tanks, two reinforced concrete sludge digestion tanks and concrete and masonry control building, reinforced concrete chlorine contact tank with masonry chlorination house, sludge drying beds, outfall sewer into the Rappahannock River, approximately 2,800 lineal feet of reinforced concrete pipe interceptor sewers ranging in size from 12 inch to 36 inch diameter, grading, seeding and sodding and other appurtenant work.

Each bid shall be accompanied by a certified check or bid bond in the amount of five (5) percent of the total bid, made payable to the City of Fredericksburg, Virginia.

Drawings and specifications may be obtained from the office of the City Manager, Fredericksburg, Virginia, or from the office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Fifteen Dollars ($15.00) for each set of drawings and specifications which deposit will be refunded upon return of the plans and specifications in good condition.

The City of Fredericksburg reserves the right to reject any or all bids and to accept the bid which in its opinion best serves the interests of the City.

By order of
Levin J. Houston, Jr.
City Manager

Bids: March 29, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-25 (N-25A, N-25B, N-25C

Proposals are invited for Contracts Nos. N-25, N-25A, N-25B and N-25C, which involve the construction of the concrete decks, and other incidental work, for the East Viaduct, extending from just west of Communipaw Avenue to just north of Grand Street, including a portion of the Ramp A and Ramp B Viaducts (Contract No. N-25A); for the West Viaduct, extending from just north of Grand Street to Second Street, including a portion of the Ramp A and Ramp B Viaducts (Contract No. N-25B); and for a portion of the north Terminal Ramps, extending from Second Street to Pier NB35 west of Monmouth Street on the Northbound Ramp, and to Pier SB45 between Monmouth and Coles Streets on the Southbound Ramp (Contract No. N-25C); all in Jersey City, Hudson County, New Jersey, and all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike. Contract No. N-25 comprises all the work required under Contracts Nos. N-25A, N-25B and N-25C.

The principal items of work for Contracts Nos. N-25A, N-25B and N-25C include:

	Contract No. N-25A	Contract No. N-25B	Contract No. N-25C
Concrete, Cu. Yds.	12,300	6,800	9,700
Reinforcement Steel, Lbs.	2,780,000	1,480,000	1,960,000
Erecting Metal Railing, Lin. Ft.	9,480	6,300	13,200

Principal items of work for Contract No. N-25 equal the sum of the quantities listed for Contracts Nos. N-25A, N-25B and N-25C. If a bidder submits a proposal for Contract No. N-25, he must also submit proposals for Contracts Nos. N-25A, N-25B and N-25 C in order that the Authority may equitably compare proposals.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'clock Eastern Standard Time on the morning of March 29, 1955 at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after March 7, 1955 at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
March 4, 1955 Paul L. Troast, Chairman

Bids: March 24, 1955

Construction of Project No. 771-F

ITEM I
ADVERTISEMENT FOR BIDS

Sealed proposals will be received by the Board of Water and Sewer Commissioners of the City of Mobile, in the City Hall, at Mobile, Alabama until 2:00 P.M. C.S.T., March 24, 1955 and then publicly opened, for furnishing all labor and materials, and performing all work required for the construction of Project No. 771-F, Conception Street Interceptor. The approximate quantities are as follows:

240 lin. ft. tunnel for 54" concrete pipe
540 lin. ft. tunnel for 48" concrete pipe
2,125 lin. ft. tunnel for 42" concrete pipe
775 lin. ft. tunnel for 36" concrete pipe
240 lin. ft. 54" concrete pipe in tunnel
540 lin. ft. 48" concrete pipe in tunnel
2,125 lin. ft. 42" concrete pipe in tunnel
775 lin. ft. 36" concrete pipe in tunnel
1,790 lin. ft. 54" concrete pipe open cut
4,195 lin. ft. 48" concrete pipe open cut
1,412 lin. ft. 36" concrete pipe open cut
34 ea. Manholes

The project includes the necessary installation of smaller sizes of vitrified clay pipe from 8" to 24" in diameter and other appurtenances necessary for the completion of the project.

All bids must be on blank forms provided in the Specifications. A certified check or a Bidder's Bond, payable to the Board of Water and Sewer Commissioners of the City of Mobile, for an amount not less than 5% of the amount bid, but in no event more than $10,000.00 shall be filed with the proposal, the Bidder's Bond being prepared upon the form specified and signed by a Bonding Company authorized to do business in the State of Alabama.

A Performance Bond in an amount not less than the sum bid will be required at the signing of the Contract, and, in addition, a bond in an amount not less than 50% of the contract price, insuring payment for all labor and materials. The right is reserved to reject any and/or all bids and to waive informalities.

Minmium wage rates on the project shall be not less than those established by Federal and/or State Agencies having jurisdiction.

Plans and Specifications are on file, and may be seen in the office of the Board of Water and Sewer Commissioners of the City of Mobile, and in the office of the Ewin Engineering Corporation, Mobile, Alabama. Plans and Specifications may be obtained by depositing $100.00 with the Engineer, which will be refunded, for one set only, to those Contractors submitting a bona fide bid and returning the Plans in good condition to the Engineer within five days after opening of bids. All other deposits will be refunded (with deductions not exceeding the actual cost of reproduction of the documents) upon return of all documents in good condition within five days after the date of opening bids.

No bid will be considered unless the Bidder, whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this construction in accordance with all applicable laws of the State of Alabama. This shall include evidence of holding a current license from the State Licensing Board for General Contractors, Montgomery, Alabama.

No bid shall be withdrawn for a period of 30 days subsequent to the opening of bids without the consent of the Board of Water and Sewer Commissioners of the City of Mobile.

BOARD OF WATER AND
SEWER COMMISSIONERS
OF THE CITY OF MOBILE
By: Wright Smith, Jr., Chairman

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS: Sealed proposals for constructing a section of Northeast Expressway in the Cities of CHELSEA and REVERE, Contract #3 consisting of double barreled highway including three overpasses, one underpass, and miscellaneous work will be received at Room 427, 100 Nashua Street, Boston, Mass., until 2:00 P.M. of Tuesday, March 29, 1955, and at that place and time publicly opened and read. Proposal guaranty: $100,000. Charge

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)
for plans and proposal forms: $40.00, amount returnable only to bidders. Complete information at said office; plans on display at District offices. Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work. By: JOHN A. VOLPE, Commissioner of Public Works. February 26, 1955.

Bids: April 22, 1955

Jersey City Incinerator Authority

NOTICE TO BIDDERS

Sealed proposals for furnishing materials and doing all work required for the construction of a Garbage and Refuse Incinerator in the City of Jersey City will be received by the Jersey City Incinerator Authority in the Assembly Chamber of City Hall, Jersey City at 10 A.M. Eastern Standard Time on Friday, April 22, 1955 at which time and place they will be publicly opened and read.

The project includes a complete four (4) furnace circular, mechanically stoked Incinerator capable of destroying 600 Tons in twenty-four (24) hours on a crane and bin type operation. The project also contains an Administration Building for the Authority.

Separate or combined proposals will be received on the seven (7) divisions of the work as follows:

Contract A—General Construction
Contract B—Incinerator and Appurtenances
Contract C—Chimney and Appurtenances
Contract D—Structural Steel and Iron
Contract E—Plumbing and Drainage
Contract F—Heating, Ventilating and Air Conditioning
Contract G—Electrical Work

In accordance with Section 40:50-5 of the Revised Statutes of the State of New Jersey, bidders will be required to furnish a financial statement and complete questionnaire on the form issued by the Authority, to establish the bidder's financial standing, experience and ability to perform the work. No questionnaire will be received by the Authority after April 12, 1955. Within seven (7) days after submission of the financial statement and questionnaire, if approved by the Incinerator Authority, bidders will be permitted to obtain plans and specifications on deposit of $100.00 each for Contract A to G at the offices of Louis P. Booz, Consulting Engineer to the Authority, 117 Smith Street, Perth Amboy, New Jersey.

Forms of questionnaire and financial statement to prospective bidders shall be obtained at the office of the Jersey City Incinerator Authority, Room 24, City Hall, Jersey City. The deposit for the plans and specifications will be returned to bidders who submit bids and who return both the plans and specification in good condition within ten (10) days after bids are received.

A certified check or bank draft payable to the Jersey City Incinerator Authority in the amount of five per cent (5%) of the bid shall be submitted with each bid.

Each proposal must be also accompanied by the appropriate surety's consent, by a surety company qualified to do business in the State of New Jersey, binding itself to become surety for the full and faithful performance of the Contract in an amount equal to 100% of the Contract price for the protection of all persons furnishing materials or labor, for fulfilling this Contract in accordance with R. S. 2A:44-143 etc.

The check or bank draft delivered with the proposal as aforesaid shall be returned to all except the three (3) lowest bidders after the opening of the sealed bids. The checks of these three (3) lowest bidders shall be held for sixty (60) days or until award of the Contract or rejection of bids.

All proposals, checks and drafts must be submitted to the Incinerator Authority at the time specified in the advertisement for proposals. None will be accepted by mail nor will any proposal be received subsequent to the time specified in this advertisement.

No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of the Jersey City Incinerator Authority of the City of Jersey City.

The Jersey City Incinerator Authority reserves the right to reject any or all bids and to waive any informality in the bids.

Jersey City Incinerator Authority
Dated March 4, 1955

OFFICIAL PROPOSALS

Change in Bid Date

Bids: March 25, 1955

Waterworks Improvements

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing materials and labor for constructing waterworks improvements for the City of Chillicothe, Ohio, will be received by the Service Director at the Council Room in the City Hall, Chillicothe, Ohio, until twelve o'clock (12:00 noon, Eastern Standard Time), March 25, 1955.

The work consists of furnishing and installing Water Distribution System Improvements and Expansion including water main extensions, reinforcing mains, fire hydrants, valves, valve boxes, booster pump station improvements, elevated tank foundation and altitude valve vault; Elevated Tank and Appurtenances; Improvements in Water Treatment Plant including treating tanks, sludge room, chemical feeder lines and carbonation system. The work has been divided into three contracts as follows:

CONTRACT 2—WATER DISTRIBUTION SYSTEM IMPROVEMENTS AND EXPANSION
CONTRACT 3—ELEVATED TANK AND APPURTENANCES
CONTRACT 4—WATER TREATMENT PLANT IMPROVEMENTS

Each proposal shall be addressed to the Service Director of the City of Chillicothe, Ohio and endorsed "Proposal" with the Contract number and its title. Each proposal shall be accompanied by a certified check on a solvent bank drawn payable to the Treasurer of the City of Chillicothe, Ohio or in lieu of a certfiied check bidders may furnish a bid bond satisfactory to the City, in an amount equal to ten percent (10%) of the bid price, said check to be forfeited to the City of Chillicothe as liquidated damages in case of failure on the part of the successful bidder to execute the contract and furnish satisfactory surety bond within ten (10) days after acceptance of the proposal.

The check will be returned to the successful bidder if the contract is executed and the necessary bond furnished within the specified time limit, and the checks of the unsuccessful bidders will be returned to them after the award is made.

Blank proposal forms, detailed plans and specification may be obtained from Alfred LeFeber & Associates, 2933 Woodburn Avenue, Cincinnati 6, Ohio upon making a deposit in the amounts indicated in the following:

CONTRACT 2—$25.00
CONTRACT 3—$ 5.00
CONTRACT 4—$15.00

For Contract No. 2 and Contract No. 4 the full amount of the deposit—for one set of documents and one-half the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City of Chillicothe, Ohio, and who also returns the plans and specifications and additional sets in good condition to the Engineer within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, sub-contracts and others who do not submit formal proposals to the City of Chillicothe, Ohio, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within ten (10) days after the opening of bids. No refund will be made for documents received after this ten (10) day period.

No refund will be made for the return of documents for Contract 3.

This project, being for a governmental unit, is exempt from Ohio Sales Tax under State Laws. Therefore, the project is exempted from Sales Tax on all materials, equipment and supplies actually incorporated into the work.

The Service Director reserves the right to reject any and all bids and to hold all bids for forty (40) days before final acceptance thereof.

City of Chillicothe, Ohio
By: Hugh N. Thompson
Service Director

U. S. Government

CORPS OF ENGINEERS, U. S. ARMY, PITTSBURGH DISTRICT—Sealed Proposals will be received at this office until 11:00 o'clock a.m., on the 17th day of March 1955, and then publicly opened, for Grading and Drainage Structures, Relocation of State Highway 7, New Cumberland Locks and Dam, Ohio River. Work to include construction of Water Intake and Discharge Structures through relocated Highway. Deposit on Plans $15.00. Further information on application at 1027 New Federal Building, Pittsburgh, Pa.

OFFICIAL PROPOSALS

Bids: March 30, 1955

Construction of Sanitary Trunk Sewer

Sealed bids for the construction of the Elmwood Avenue Relief Sanitary Trunk Sewer from Winton Road to Bonnie Brae Avenue and/or the construction of the Buckland Creek-Elmwood Avenue Stormwater Drain will be received by the Board of Sewer Commissioners of Brighton Sewer District No. 2 of the Town of Brighton, at their office at the Allen's Creek Disposal Plant, 412 Linden Avenue, Rochester 10, New York, until one o'clock P.M., E.S.T. on the thirtieth (30th) day of March, 1955.

Bidding forms can be obtained and plans and specifications examined at the office of the Sewer Commissioners, or the office of William S. Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications may be obtained upon the payment of ten dollars ($10.00) for each set, which will not be refunded.

The work consists of the construction of approximately:

1,900 feet of 24" diameter sanitary sewer under the bid items for the Elmwood Avenue Relief Sanitary Trunk Sewer;
3,600 feet of 66" diameter stormwater drain;
950 feet of 18" sanitary sewer under the bid items for the Buckland Creek-Elmwood Avenue Stormwater Drain.

Harold V. Madigan
Lawrence A. Platt
G. Alfred Sproat
BOARD OF SEWER COMMISSIONERS

March 3, 1955

Bids: April 5, 1955

Contract NA-290.002

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
DECKING PEDDIE DITCH

Sealed proposals for reconstructing a portion of the Peddie Ditch at Newark Airport, Newark, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 5, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 10, 1955

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4364) will be received at Huron, South Dakota, until April 12, 1955, for furnishing labor and materials for Pierre Substation, Transmission Division, Missouri River Basin Project, South Dakota. Location in city of Pierre, South Dakota. Principal items are 1,660 cu. yds. excavation; 48,500 lbs. furnishing and erecting steel structures; 135 cu. yds. concrete; constructing service building, lump sum; installing 21 transformers; and other work. Completion time 230 days. For particulars, address Bureau of Reclamation, P. O. Box 2130, Billings, Montana, or P. O. Box 825, Huron, South Dakota, or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ESTIMATOR EXPERIENCED in building construction. Permanent position with large general contractor specializing in construction of industrial, commercial and public buildings in Ohio, Michigan and Indiana area. Write fully stating experience, education, salary expected and furnish references. All replies confidential. P-5656, Engineering News-Record.

WANTED—NEW England contractor wants man with experience for fleet trucks and cranes. P-5700, Engineering News-Record.

WANTED — ERECTION Manager, executive with ability to handle sub contractors, erection division. P-5701, Engineering News-Record.

WANTED—MANAGER, to handle pile-driving division as a sub-contractor for New England outfit. P-5702, Engineering News-Record.

ESTABLISHED construction firm desires young construction engineer as project manager. Purchasing and expediting experience required. Estimating experience desirable. State education, age and experience. P-5704, Engineering News-Record.

MALE HELP Wanted: Reinforcing bar estimators and detailers, structural steel detailers, must be experienced. Personnel, P. O. Box #1087, Charlotte 1, N. C.

GENERAL SUPERINTENDENT experienced chemical and refinery construction for midwestern contractor. Write stating qualifications, previous employment, availability, education, references, and salary expected. P-5696. Engineering News-Record.

BRIDGE DESIGNER, Richmond, Virginia, graduate civil engineer, several years experience railway bridge designing. Give age, education, experience, reference, salary. P-5613, Engineering News-Record.

WANTED: ARCHITECTURAL draftsman for school and church drafting, building and structural design. Need experienced man qualified to take responsibility. Write P. O. Box 204, Lancaster, Ohio giving qualification, experience and salary or phone Lancaster 2243W for appointment.

CHIEF CEMENT Chemist wanted with experience as Chief or Assistant Chief Chemist in a Portland Cement Manufacturing Plant or equivalent. Attractive proposition awaits the right party. Location, middle eastern states. P-5582, Engineering News-Record.

SMOKE & HEATING Plant Inspector Wanted. $410 a month to start. Annual automatic increases to $475. Later longevity increases. Inspectional and enforcement work on all types of heating plants and ventilating systems; and smoke abatement. Applications accepted until needs of service filled. Residents of Illinois, Iowa, Minn., Mich., and Wis. only. Personnel Division, City Hall, Madison 3, Wis., ALpine 6-8331.

ASSISTANT ENGINEER wanted by the City of Fulton, New York. Salary $4100 to $4500. Retirement, sick leave, and vacation benefits. Experience in Municipal Engineering preferable. Write or call City Engineer, City Hall, Fulton, New York.

CIVIL ENGINEER: Experience as transitman, chief of party, or inspector on construction. Salary $2951.50 to $4609.00; Civil Service, cost-of-living, retirement and vacation benefits; immediate employment; permanent after qualifying examination. State qualifications, age, salary requirements and availability. Town Engineer, Town Hall, Arlington, Mass.

WANTED—SMOKE abatement Engineer, salary open—apply to: Mr. Joe L. Greenlee Personnel Manager, Room 303, City Hall Building, Charlotte, North Carolina.

ASSISTANT DIRECTOR of Public Works, salary open; engineering aid III, $340-$416; engineering aid II, $284.50-$335. Write City Clerk, City Hall, Ames, Iowa for application blanks and job descriptions. Closing date March 18, 1955.

STRUCTURAL ENGINEERS—For design-development of expanding line of non-residential steel buildings. Must be familiar with industrial building design, be able to design and detail structural elements and do drafting work. Experience in design of light gage steel structures and built-up welded sections desirable. Permanent salaried positions in mid-west. Sent resume to P-5709, Engineering News-Record.

RESIDENT ENGINEER-Inspector needed in Atlanta, Georgia, on bank building of highest type. Several years employment for qualified man. Structural, mechanical, and finish experience essential. Submit immediate past record, references, salary. Toombs, Amisano & Wells, Architects, 70 Fairlie St., N.W., Atlanta, Ga.

(Continued on following page)

ENGINEERS
Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes
PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER
Howard, Needles, Tammen & Bergendoff
1805 GRAND AVE. KANSAS CITY 8, MO.

ENGINEERS
Foreign Service
Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.
Recruiting Supervisor, Box 30
ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE, NEW YORK 22, N. Y.

SANITARY ENGINEER
Graduate Civil or Sanitary Engineer with at least ten years experience in sanitary engineering.
Excellent opportunity for engineer capable of working with clients and supervising projects in report, design and construction stages.
Permanent position, liberal benefit plans and good working conditions.
Location, Middle West. Submit complete information on education, experience and salary requirements to:
P-5766, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
Construction Superintendent
for work in Kansas, with experience in institutional and office buildings, industrial type buildings and government projects. Must be capable of taking complete charge of work. State starting salary, age and when available.
P-5521, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Engineer—Construction
Experienced in design, estimating, job management & field supervision of industrial buildings. Permanent position vicinity Newark N. J. C.E. degree required. Send complete resume of education, experience & salary requirements
P-5767, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

DRAFTSMEN
Mechanical Draftsmen for general plant engineering work in large pulp and paper mill. Chemical plant experience in process and piping drafting desirable. Positions permanent. All employee benefits, insurance, vacations, retirement, etc. Send Resume to
Director of Personnel
WEST VIRGINIA PULP & PAPER CO.
LUKE, MARYLAND

DESIGN ENGINEERS
Excellent opportunity for Engineers experienced in design of Filter Plants and Water Works—Bridges and Highways. Recent Graduates also accepted. Good living conditions and Bonus and Pension Plan. Include experience, date available, salary desired in first letter. Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Pa.

INSPECTORS
WANTED IMMEDIATELY FOR OFF-CONTINENT AIRBASE PROJECT
PAVING (Asph. & Conc.)
STRUCTURAL
ARCHITECTURAL
ELECTRICAL
MECHANICAL &
GRADING
Minimum 2 years as an Inspector
Also
LAB ENGINEERS & ASSISTANTS
P-5771, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

MECHANICAL ENGINEER WANTED
Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience.
P-5434, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ASSISTANT CHIEF ENGINEER
Guam, Pacific Island, Project
Must have 10 years' experience in various phases of construction and engineering operations, and be able to supervise and direct the work of others. Graduate Engineer required.
ENGINEERS
Technical and Narrative Reports
Electrical Design
Architectural and Structural Design
Write, giving detailed account of experience, education, etc.
BROWN-PACIFIC-MAXON
"Guam" Contract NOy-13931
P.O. Box 3316, Rincon Annex
San Francisco "2"—Calif.

SALES ENGINEERS
Middle Atlantic Division of large company has openings for sales engineers in Baltimore; Boston; Harrisburg, Pennsylvania; and Trenton, New Jersey to handle promotion and sale of fabricated metal products to engineering and construction markets. Ages 24 to 30. Engineering degree necessary.
P-4753, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALES ENGINEER
Chicago
Progressive, 50-year old structural steel firm in Western Pennsylvania wants a top notch sales engineer representative who knows his way around fabricated structural steel buyers in Chicago area. Ability to sell is more important than engineering background since this man will have backing of a skilled engineering department. No objection to man with allied lines. Accompany request for interview with all pertinent details as to background, salary desired. All replies confidential.
P-5715, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FIELD CONSTRUCTION ENGINEERING MANAGER:

1. Experience in building hundreds of houses, especially engineered, panelized type.
2. Development of housing projects, plat planning, lots, streets, utilities, sewage disposal plants, etc.
3. Close supervision and expediting sub-contractors.
4. Experienced in cost estimating.
5. Must know construction problems and value of timing.
6. Prefer man known in and familiar with the southwestern states. Send references and salary expected.

Address replies to President,

TEXAS HOUSING COMPANY

Post office Box 7265 Dallas 9, Texas

STRUCTURAL STEEL DETAILERS AND CHECKERS

Top rates for exp. men, long program, overtime, vacation, holidays.

SAMUEL LICHTENBERG
STRUCTURAL ENGINEER
113 West 42nd St. New York 36, N. Y.

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in pulp and paper maintenance for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary with excellent opportunity for advancement. Give detailed resume of experience.

P-5431, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL DESIGNERS
for work on
Major Bridge Projects
Recent Graduates will be trained
MODJESKI & MASTERS
State St. Bldg. Harrisburg, Pa.
or 2400 Canal St., New Orleans 19, La.

POSITIONS VACANT

(Continued from preceding page)

WANTED — STRUCTURAL Steel estimator. Must be experienced in taking off structural steel and miscellaneous iron. Quantities from architects drawings. Permanent position. City Iron Works, 350 New Park Avenue, Hartford, Conn.

CIVIL ENGINEERING Teacher—to teach lecture and laboratory courses in surveying, strength of materials and construction engineering. M.S. in C.E. plus construction exper. required. Excellent opportunity for young man. New Building and equipment. Good salary schedule. Write Head, Engineering Dept., San Jose State college, San Jose, California.

EXPERIENCED STRUCTURAL steel detailer with at least 5 years experience in fabricating shop to check shop drawings for steel highway bridges by State Highway Department in Rocky Mountain area. Send detailed summary of experience together with minimum salary acceptable. Reply to P-5772, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALESMEN: DISTRIBUTOR and Manufacturer of leading construction and industrial equipment requires services of several men to solicit heavy construction contractors and industrial plants in N.Y.C. metropolitan area. Prefer engineering background but not necessary. Substantial salary, commission, all selling expenses and transportation furnished. Excellent opportunity for man to associate with an old line outfit. State past experience, age, education. SW-5721, Engineering News-Record.

POSITIONS WANTED

CONSTRUCTION EXECUTIVE, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-5074, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, over 20 years broad experience various types projects. Engineer. Anywhere. PW-5538, Engineering News-Record.

POSITIONS WANTED

CONSTRUCTION STIFF. Rigger, who has worked with lubricating oil for years as a hobby, seeks employment in a modest capacity, with a construction company, or other fleet owner using large quantities of oil, where his information and paraphernalia will be investigated, and where he will be encouraged to go ahead with some things he wants to do. Local or foreign. Sidney Stribling, Sta. 8, Asan, Agana, Guam, M. I.

CONSTRUCTION SUPERINTENDENT and engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-5638, Engineering News-Record.

ESTIMATOR, AGE 30, general const. 8 yrs., estimating, purchasing, expediting and field supervision. Will relocate. PW-5662, Engineering News-Record.

CONSTRUCTION ENGINEER. Broad experience supervising construction industrial, bridge, waterworks, sewage, highway and heavy construction projects. Capable organizing and supervising entire construction program. No design. Graduate, registered age 55. Available April 1. PW-5663, Engineering News-Record.

SUPT. HEAVY blasting, earth moving and extensive experience with rock. PW-5694, Engineering News-Record.

CONTRACTORS CHIEF Engineer — age 52 wide top flight experience — 12 years heavy and 18 years bldgs — much experience competitive bidding public work. Have for many years had full responsibility of bidding & job management. Have a very successful background. PW-5655, Engineering News-Record.

CONSTRUCTION EXECUTIVE — General construction superintendent available in administrative and executive position. Broad varied experience in organizing, coordinating, and directing construction projects. Graduate engineer. Past experience includes successful management of construction office, transacting 12 million dollars worth of business. PW-5668, Engineering News-Record.

CONSTRUCTION EXECUTIVE desires position as project manager or general superintendent. Competent administrator and supervisor, experienced in heavy construction, buildings and bridges. C.E. degree. P.E. Age 41. Prefer position in metropolitan New Jersey. PW-5673, Engineering News-Record.

ENGINEER, STRUCTURAL design and construction, BCE, PE, age 27, married. 7 years diversified experience. Desires responsible position with progressive organization in New York or New England. Resume furnished on request. PW-5720, Engineering News-Record.

ESTIMATOR — PRICING, take-offs, costs — eleven years heavy construction experience includes bridges, highways, docks, railroads. Have been project manager, design engineer, and cost engineer on jobs with excavation, piling, concrete, and utilities. C.E. Grad. P.E., 34. Met. N. Y. area. PW-5710, Engineering News-Record.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

TAMBLYN SYSTEM
1420 Gilpin St. Denver 6, Colorado

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
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CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

It's Here . . . Contractors, Estimators
The Estimating Book You've Been Searching For!
ESTIMATING PRODUCTION AND CONSTRUCTION COSTS
Never Goes Out of Date
Estimate general construction costs. More Accurate.
Write for 10 day free exam. $15 postpaid from:
THE DALLAVIA CO.
Dept. E 2110 Elmen, Houston, Texas

MANAGER HEAVY CONSTRUCTION

Capable administrator desires change.

PW-5774, Engineering News-Record
330 W. 42nd. St., New York 36, N. Y.

POSITIONS WANTED

CONSTRUCTION ENGINEER, Reg P.E., New York State, 6 years good experience in the field on heavy construction, knowledge of costs, desires position offering opportunity and challenge with progressive contracting organization. PW-5726, Engineering News-Record.

CONSTRUCTION ENGINEER, age 37, Reg. P.E. Experienced all phases road construction including excavation, drainage, and pavements in engineering, estimating, and field supervisory capacities with profit making results. Interested association with substantial highway constructor as project superintendent or engineer. PW-5725, Engineering News-Record.

SEWER FOREMAN, expert timberman, middle age, Italian, thoroughly experienced in sewer and drainage construction, desires permanent connection. Any location. PW-5732, Engineering News-Record.

CONSTRUCTION ENGINEER CE 28; 5 years varied heavy construction experience in highway, building and office engineering. Responsibility desired. PW-5776, Engineering News-Record.

SAFETY ENGINEER (38) associate member ASSE, 16 yrs. construction experience. Full responsibility. Will travel. L. R. Bright, Box 657, Mt. Home, Idaho.

MECHANICAL ENGINEER — Thoroughly experienced in industrial, process and commercial piping and heavy equipment installation, industrial plant and foundation construction. Qualified estimator and planner with supervisory ability. Seeking position where ability and conscientious efforts can be applied. Will consider any locality. PW-5775, Engineering News-Record.

MECHANICAL ENGINEER, with C.E. training, 25 years supervisory and administrative positions large heating, air conditioning, plumbing, power and process piping and equipment installations covering layout, estimating, purchasing, field supervision, sales, operation and project management seeks permanent connection in similar capacity in southern states. Presently employed on A.E.C. process piping project. Available 2-3 weeks. PW-5785, Engineering News-Record.

WORK WANTED

STRUCTURAL STEEL detailing work wanted by experienced men. Bridge detailing a specialty. Located near metropolitan N. Y. area. WW-5484, Engineering News-Record.

SPECIAL SERVICES

Appeals Service; Construction Contractors, who intend to appeal decisions of the contracting officer concerning disputed questions of fact under government contracts, are offered complete representative service covering analysis, preparation and processing of appeals. SS-5062, Engineering News-Record.

Civ. Eng. desires to get consultation regarding his intention to invest his working-power and to get financially interested in Cons. Struct. firm. SS-5762, Engineering News-Record.

CONSTRUCTION BOOKLET

For planning and construction estimates by engineers and contractors. Copyrighted booklet of basic formula and sample charts for rapid and accurate estimating of grading quantities for highways, railroads, canals, dams, etc. Based on many years of actual experience. $3.00 per copy, postpaid. Send orders to D. Misz, 140 E. 63rd St., N.Y.C. 21.

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ALL TYPES OF ROCK DRILLS, ROCK BITS, DEMOLITION TOOLS, ETC.

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112 N. 3rd Ave. Mt. Vernon, N. Y.

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DURABLE · DEPENDABLE · GUARANTEED

Partial list only—if what you need isn't listed, just contact our nearest plant. We'll gladly quote on your requirements.

AIR COMPRESSORS, ELECTRIC

360′ Ing. Rand, 75 HP 3/60/440, receiver compensator.

160′ Davey, 100#, 35 HP 3/60/220, receiver, starter.

105′ Davey, 100#, 25 HP 3/60/220, receiver.

BIN

150 ton (100 yd.) 3-compt. Butler Steel Bin, 2 yd. weigh-batcher, 3-beam scale; center compartment for bulk cement.

CRANES, LOCOMOTIVE

30 ton Mdl. F OHIO #3266, 50′ boom, oil fired, 200# approved boiler, beautiful shape.

Can also offer up to 40 ton Diesels.

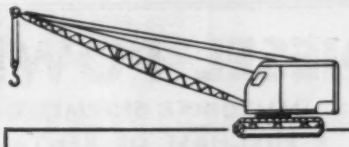
CRANE, WAGON

Unit Model 1020 self-propelled Wagon Crane, cap. 11 ton or 15 ton with outriggers, 40′ boom, Chrysler gas eng., tandem dual drive, mtd. 12 pneu. tires. Rebuilt from top to bottom and priced low.

DERRICKS

30 ton Wiley Mdl. F steel Stiffleg, 60-80 or 100′ boom, rated with 60′ boom 30 ton @ 38′ or 15 ton @ 57′.

20 ton American Terry Steel Erectors Guy Derrick, 110′ mast, 100′ boom.



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1½ yd. P&H 655-A Diesel Crane or Dragline, 75′ boom, 20′ jib, hi gantry, Cat. D-13000 eng.

1½ yd. Mdl. 77 Lorain #9163, D13000 Cat. Diesel eng., 45-85′ boom, 20′ jib. Wt., 40 ton.

Mdl. 501 Koehring #1071, 60-70-80′ boom, 18′ jib, Mdl. K Wisc. gas eng., 20 ton @ 12′. Wt. 97,200#.

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Mdl. 255A P&H #8243, 30-40′ boom, Chrysler 8 cyl. gas eng., cap. 16,900# @ 12′.

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American 2-speed Band Friction Dragscraper hoists, 125 HP 3/60/220, drum controllers, grids, rated 6 ton @ 250 FPM for digging and 2½ ton @ 600 FPM for hauling.

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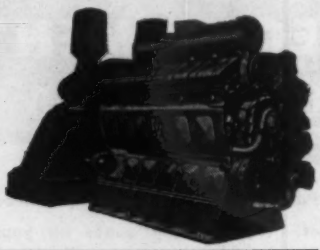

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1136	Fairbanks Morse	38D	1600	720	300	Fairbanks Morse	32E14	450	300
1100	General Motors	16-278A	1600	720	300	General Motors	8-268A	450	1200
1000	General Motors	16-567B	1440	720	250	Clark	GD-4	375	360
750	General Motors	12-567	1080	720	200	General Motors	8-268A	350	900
700	Worthington	EE-8	1000	327	175	General Motors	12-71	275	1800
675	Fairbanks Morse	38D	960	720	150	Buckeye	80	240	600
500	General Motors	8-567	720	720	148	Fairbanks Morse	32E14	220	300
500	Alco	6-12 x13T	750	600	100	General Motors	3-268A	150	1200
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EDITORIALS

An Overrated Highway

VICE PRESIDENT NIXON took a logical stand when he urged the United States to continue to pay part of the cost of completing the Inter-American Highway through the states of Central America. This country, years ago, obligated itself to do that. But when the Vice President said that the presently authorized expenditure of $8 million a year is not enough, he is being misled by someone.

Actually, Congress has been both fair and realistic with respect to the Inter-American Highway.

With no evidence to show that the uncompleted sections of that highway are important enough to warrant large annual expenditures by our government, Congress nevertheless foresaw the need for a continuing authorization of a definite amount that would permit the local governments and the Bureau of Public Roads to lay out a sound long-range construction program. Consequently, in the Federal Aid Highway Act of 1954 it authorized $8 million for each fiscal year from 1955 through 1959 to replace earlier authorizations on only a two-year basis. More than $8 million would hardly have been realistic in view of the fact that the latest report of the Bureau of Public Roads states that only $1 million was spent in 1954 "to continue cooperative work on the Inter-American Highway."

The Inter-American Highway is of value chiefly as a means of promoting continental solidarity. Its completed sections have helped to improve local highway transportation and communication between adjoining countries. But as a transportation link between this country and the Canal Zone, its value is negligible. That fact was brought out in 1943 when work was stopped because the Defense Department did not consider the highway essential to defense of the Panama Canal.

Of the 3,200 miles between Laredo, Texas, and the Canal Zone, about 240 miles are classified as "impassable," which means that little or no work has been done. Most of this—about 200 miles—is in very mountainous country in southern Costa Rica and northern Panama. There appears to be no urgent need for that section, and any attempt to push construction through such mountainous country is bound to be costly. Also, some of the people who have studied the project believe that a preferable route for that part of the highway would be along the coast instead of through the mountains.

What is urgently needed is a fresh appraisal of the whole undertaking and a logical long-range construction program covering rehabilitation or improvement of existing sections of the highway plus whatever new work is found justified on the missing links. Such an appraisal might show that relatively small expenditures to improve the usefulness of existing sections would do much more to maintain good relations with the Central American countries than could be done by big expenditures on the costly missing links through largely uninhabited regions.

In any event, until Congress has such a program before it, it should not be criticized for not authorizing larger expenditures on the Inter-American Highway.

Do It Again, Mr. President

TWICE IN RECENT WEEKS we have seen the effect of Presidential influence in fields of construction needing a push. First it was highways, then schools—both national problems of first magnitude. How about water pollution as a third problem deserving of such high-level attention?

For highways—wearing out faster than they are being built—the nation's highway engineers had the solution, but it took the President to transform it to a "grand plan" that would arouse public interest and stimulate action.

For schools—being built at a rate far short of what's needed—the required rate of adding classrooms was known, but again it was President Eisenhower's request to Congres for federal aid that put the spotlight on the problem, educated the voter as to its magnitude and gave the cost of complete solution for his consideration.

What of water pollution? It may be of less urgent concern than inadequate highways and inadequate schools, but it, too, is a national problem. Indeed, it has been called by the Sunday supplement writers "our national disgrace." Waste disposal facilities lag far behind the rate of construction needed if the nation's streams are to be reclaimed and conserved for their best uses.

As with highways and schools, those close to the water pollution problem know its extent and roughly what it would take to correct it. It would take relatively little—maybe $12 billion over a period of 10 years, or an increase of something on the order of 50% over what is already being spent by cities and industries.

Those close to the water pollution problem have not been able to educate the whole nation entirely to the need. Their efforts, however commendable, have been expended on plans necessarily limited in size and scope. Small plans won't do it. "They have no magic to stir man's blood." A "grand plan" could dramatize this need, intensify and coordinate—without federally controlling—all present commendable efforts toward its fulfillment. It would take some relatively modest federal aid, like a tax break on investments in industrial wastes facilities, and perhaps slightly more federal aid to cities, states and interstate agencies than is provided under the Water Pollution Control Act of 1948.

The same kind of Presidential push that promises to send road and school construction programs rolling could do the same for water pollution abatement.

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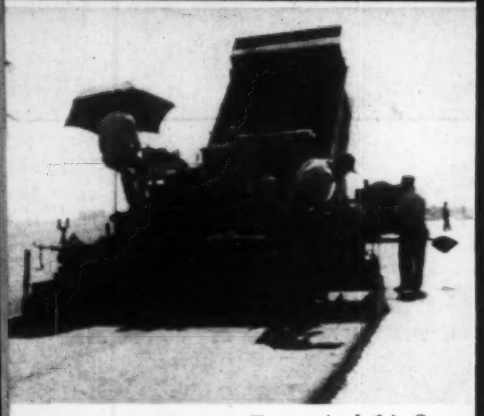

Constructing a hot-mix Texaco Asphaltic Concrete pavement on 10 miles of US Route 87 in Colorado, after widening old concrete road from 18 to 28 feet. View of completed project at top.

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